The NATIONAL BANKING REVIEW

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A JOURNAL OF POLICY AND PRACTICE

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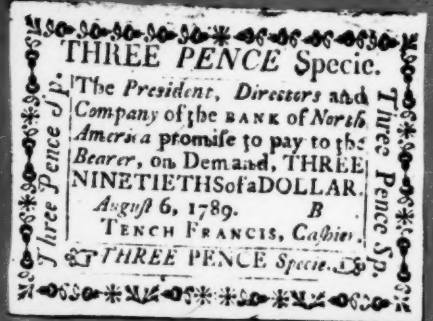
THE ADMINISTRATOR OF NATIONAL BANK

UNITED STATES TREASURY

The United Colonies
TWO DOLLARS.
No.
THIS Bill entitles the Bearer to receive TWO SPANISH MILLED DOLLARS, or the Value thereof in GOLD or SILVER, according to a Resolution of CONGRESS, passed at Philadelphia, July 22, 1776.
TWO DOLLARS.


THREE PENCE Specie.
The President, Directors and Company of the BANK of North America promise to pay to the Bearer, on Demand, THREE NINETIETHS of a DOLLAR.
August 6, 1789. B
TENCH FRANCIS, Cashier.
THREE PENCE Specie.

Articles on

- Foreign Banking in the United States
- The London Eurodollar Market
- Interest Rates and Inflation in Taiwan
- Money Markets and Monetary Policy
- Monetary Policy and Near Banks
- Deposit Variability
- Joint Demand and Time Deposits
- Borrowers in International Capital Markets

- Comment and Rejoinder
- Legal and Regulatory Developments
- Selected Statistical Data
- Book Reviews

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The NATIONAL BANKING REVIEW

A JOURNAL OF POLICY AND PRACTICE

Volume 4 September 1966 Number 1

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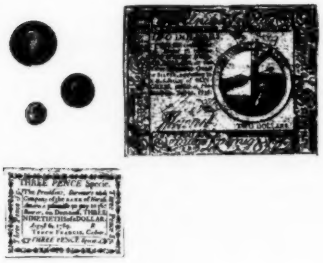

ON THE COVER—The two-dollar note, authorized by the Continental Congress, was one of the early issues, appearing before the "continentals" began their rapid depreciation. The coins—a half dollar, half disme, and a five-dollar gold piece—were among the first struck by the Philadelphia mint pursuant to the Coinage Act of 1792. The three-penny note, a rarity, was issued by the country's first commercial bank, the Bank of North America.

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►JACK ZWICK

The Regulation of Foreign Banks in the United States

A recent legislative proposal advocates placing under Federal control the supervision and examination of foreign banking offices in the United States.[1] The proposal raises basic questions regarding the propriety of Federal versus state jurisdiction over foreign banking units and regarding the permissible scope of foreign bank operations in the U.S. The characteristic activities of foreign bank offices and the existing arrangements for supervising them were examined in the author's earlier paper.[2] These activities are reviewed here and the proposals for Federal legislation analyzed.

Jack Zwick is Assistant Professor of Business at the Graduate School of Business, Columbia University.

[1] Foreign Banking Control Bill, introduced by Senator Jacob Javits, *Congressional Record*-Senate, August 25, 1966, pp. 19665-19667.

[2] Jack Zwick, "Foreign Banking in the United States," *Joint Economic Committee Print*, Washington, D.C., July 1966.

The present structure of foreign banking in the United States is largely explained in terms of the growth of U.S. aid and trade and the emergence of the U.S. dollar as a key reserve currency. Also important have been reciprocity considerations and competitive factors affecting both American and foreign banks.

Between 1946 and 1960, foreign banks expanded in the United States mainly by opening representative offices and agencies in the major centers of international trade and finance. Forty-two foreign banks opened more than 79 representative offices and 37 agencies. Although geographic breakdown in Table 1 is by state, virtually all the New York and California representative offices and agencies (which account for more than 85 percent of the total) are located in New York City and San Francisco. A parallel development during the 1950's and 1960's was the establishment of state-chartered subsidiaries by foreign banks in New York,

California and Illinois. Seven of the 35 subsidiaries offered by foreign banks were opened in New York to complement the banks' agency operations which are prohibited by law from receiving deposits or engaging in trust activities. Other subsidiaries of foreign banks established in New York include three institutions chartered as "investment corporations" under the New York State Banking Law. In 1961, the New York State Banking Law was amended to permit branches of foreign banks to accept deposits in New York, and to engage in a broad range of banking functions.[3] Outside New York foreign branching has been authorized only in Puerto Rico, the Virgin Islands and in Massachusetts, Oregon and California.[4]

Thus, foreign banking activity is not very extensive in the United States and only six states have legislated in the area.[5] Of these states, only New York, Massachusetts and Oregon allow foreign banks to operate through any instrumentality of their choosing, i.e. agencies, branches or local banks owned by them. (See the Appendix for an annotation of powers which foreign banks enjoy in these six states.) The remaining 44 states either have no laws relating to foreign banking or have statutes expressly prohibiting foreign banking. Most states have not perceived tangible benefits to be derived from promoting their principal cities as financial centers by allowing important international banks to establish operations there. Nor have many domestic banks exerted pressure on their state governments to extend banking privileges to foreigners in order to secure reciprocal banking privileges for themselves.

I. *Representative Offices* [6]

Foreign banks have regarded the representative office as the most flexible form for entering our domestic banking markets. Although representative offices are not authorized to enter into actual banking transactions, they have facilitated banking transactions through correspondent banks while cultivating and protecting the parent banks' interests. Some representative offices have been converted to agencies or state-chartered subsidiaries.

II. *New York State Investment Companies*

A small number of international financing companies are chartered under the New York State Investment Company Act as investment corporations. These companies possess substantial expertise with respect to particular industries and types of goods and have established close relationships with importers and exporters

[3] Between 1961 and 1966, 15 foreign banks opened 23 branches in New York (Table 3).

[4] Canadian banks operate seven branches in Puerto Rico, three in the Virgin Islands, and one each in Oregon and Washington. A Japanese bank also operates a branch in Oregon. These 13 branch offices, together with the 23 offices in New York, comprise the total foreign branch population in the United States and its territories.

[5] California, Hawaii, Massachusetts, New York, Oregon, and Washington.

[6] The discussion of foreign banking activities which follows is based on information obtained from a number of sources. First, articles and news releases have provided background information. Secondly, published call reports for the institutions in California, Washington and Oregon have revealed certain characteristics of these banks' operations. Thirdly, and most important, have been 36 interviews with lawyers; officers from the Departments of State and Treasury, state banking departments, and the Federal Reserve Bank of New York; and officials of foreign and domestic banks from different sections of the country. Since there is a paucity of published financial data regarding foreign bank activities (particularly in New York), it has not been possible to substantiate the insights obtained during interviews. Nonetheless, verbal confirmations from different sources have provided reasonable assurances that the description below is accurate.

TABLE 1

Offices of Foreign Banks in the United States
By Type of Office and by State

	Foreign Banking Offices*		Representative Offices	State-Chartered Subsidiaries	Branches of State-Chartered Subsidiaries
	Agencies	Branches			
California	11		7	7	14
Illinois			6	1	
New York	24	23	62	7	
Oregon		2			
Texas			4		
Washington		1†			
Puerto Rico		7			
Virgin Islands		3			

* No offices currently exist in Massachusetts and Hawaii although laws in these states authorize foreign banking offices.

† Branch operates under "grandfather clause."

in particular areas of the world. Because of their expertise, they have been able to promote and finance the exports of small and often unknown firms. These firms have also provided nonrecourse financing to credit-worthy exporters.

The investment companies have also offered advice and direct financing to firms who are establishing marketing or franchised distribution networks for their products in foreign markets. By offering these services, which few domestic or foreign banks are willing to provide, the investment companies have expanded the scope of the financial community's services to international businesses.

III. *Foreign Branches*

If a foreign bank intends to receive deposits subject to withdrawal by check, it must establish either a state-chartered subsidiary or a branch. The procedures and requirements relevant to a subsidiary application are quite similar to those for a domestic bank. To open a branch in New York (where the majority of foreign branches is located) the following conditions must be met:

(1) Evidence must be provided that the applicant's home country does not prohibit the operation of branches or agencies by New York banks.

(2) The Superintendent must be convinced that the foreign branch "will be honestly and efficiently conducted and that public convenience and advantage will be promoted."

(3) A guarantee fund composed of cash and/or securities equivalent to 5 percent of liabilities (but not less than $100,000) must be deposited by the prospective foreign branch in an approved New York bank.

(4) The parent bank must have capital funds of at least $1 million to be eligible for a branch license, an amount which is higher than that for establishing a subsidiary, or even a domestic bank.

(5) A license must be obtained from the Superintendent of Banks subsequent to affirmative evaluation of the branch application by the State Banking Board.

Most foreign banks prefer to establish branches rather than state-chartered subsidiaries. The branch provides a less-complicated organizational structure. The necessity of having American stockholders and a local board of directors which controls the affiliate is circumvented. Difficulties encountered in obtaining suitable local residents as directors to satisfy state requirements are avoided and, it is argued, the home office can more effectively control operations of a branch.

Also, less capital is typically required than for a state-chartered subsidiary. The loan limit of a subsidiary is determined by the subsidiary's capital position and, therefore, substantial capital must be in-

TABLE 2

Condensed Composite Balance Sheet for All Foreign Branches Licensed in New York State (in millions of dollars)

	Sept. 30, 1965	Dec. 31, 1964	Dec. 31, 1963	Dec. 31, 1962
Number of Branches	22	21	16	8
ASSETS				
Cash and balances with other banks	$161	$200	$171	$ 38
Bonds and corporate stocks	99	125	99	67
Loans and overdrafts*	600	555	386	166
Customers' liability on acceptances	33	26	23	4
Due from own head offices and branches	73	52	35	22
Other assets	24	26	29	10
Total assets	$993	$986	$747	$309
LIABILITIES				
Deposits of foreign governments, central banks and other foreign banks	$112	$145	$ 86	$147
Other deposits	447	397	305	24
Liabilities for borrowed money	5	7	6	11
Acceptances outstanding	40	34	31	9
Other liabilities	14	15	24	2
Total liabilities, exclusive of amounts due to own head offices and branches	$619	$600	$454	$194
Due to own head offices and branches	374	385	292	114
Total liabilities	$993	$986	$747	$309
*Includes loans to brokers and dealers in securities	$129	$145	$100	$ 49

Source: **Annual Report of the Superintendent of Banks**, State of New York, No. 91, 1966, pp. 196-197.

vested if the subsidiary is to make loans of substantial size. On the other hand, the loan limit of a branch is a function of the capital position of the parent bank, and, thus is likely to be much higher than that of a subsidiary.

The parent bank has broad discretion to move funds to and from a branch without obtaining advance clearance from the state supervisory authorities. Moreover, branches usually afford substantial tax advantages in comparison with subsidiary banks. Finally, whereas a subsidiary stands on its own base and has a separate name from the parent bank, a branch functions with the parent name and resources at its disposal, and, consequently, can take advantage of the greater familiarity and prestige associated with the parent name. This advantage

TABLE 3

Branches of Foreign Banks
1966
(In New York State)

Name	Headquarters	Number of Offices
Algemene Bank Nederland N.V.	Amsterdam, Holland	1
Banca Nazionale Del Lavoro	Rome, Italy	1
Banco da Lavoura de Minas Gerais, S. A.	Bello, Horizonte, Minas Gerais, Brazil	1
Banco de Ponce	Ponce, Puerto Rico	3
Banco Popular de Puerto Rico	San Juan, Puerto Rico	3
Bank Leumi le-Israel, B.M.	Tel Aviv, Israel	1
Bank of London & South America, Limited	London, England	1
Barclays Bank D. C. O.	London, England	2
Chartered Bank, The	London, England	2
Intra Bank (Societe Anonyme)	Beirut, Lebanon	1
Israel Discount Bank Limited	Tel Aviv, Israel	1
National Bank of Pakistan	Karachi, Pakistan	1
Societe Generale pour favoriser le developpement du Commerce et de l'Industrie en France	Paris, France	2
Swiss Bank Corporation	Basle, Switzerland	2
Swiss Credit Bank	Zurich, Switzerland	1
Total Offices Located in New York State		23

(Outside New York State)

Name	Headquarters	Number and Location of Offices
Canadian Imperial Bank of Commerce	Montreal, Canada	2 Oregon and Wash.
Bank of Tokyo	Tokyo, Japan	1 Oregon
The Bank of Nova Scotia	Halifax, Nova Scotia	3 Virgin Islands 2 Puerto Rico
The Royal Bank of Canada	Montreal, Canada	5 Puerto Rico

Source for New York State: **Annual report of the Superintendent of Banks,** State of New York, No. 91, 1966, pp. 196-197.

has been cited as important in attracting foreign-owned dollar deposits, both from the home nation and third countries.

There are 36 foreign branches in the United States, most of which have been established in New York since 1961 (see Table 3). More than 90 percent of foreign branch assets are held by the branches licensed in New York. The only published data regarding the New York branches are the abbreviated balance sheets which appear in Table 2.

The principal activities of the foreign branches are trade financing, the investment of dollar resources, commercial lending and deposit solicitation, and personal lending and deposit solicitation. In contrast to domestic banks, for which trade financing is invariably of secondary importance, virtually all of the foreign branches depend upon trade financing for a major portion of their business. Several have indicated that more than 50 percent of their loans and discounts relate to transactions involving foreign trade. The trade financing frequently involves the United States and a third nation, rather than the United States and the nation of the parent bank. The American branches of these banks act as contacts for networks of bank branches throughout the world, and en-

able the banks to complete both ends of trade financing involving the United States and any of numerous other nations.

Recently, two banks from developing countries have opened branches in New York, primarily to finance trade between the U.S. and their home nations. Brazil's largest bank saw a natural opportunity to extend its services at the inception of the Alliance for Progress. Similarly, a Lebanese bank believed that its extensive branch system in the Arab Middle-East could be used to promote import-export activities between the United States and that area of the world.

Most of the foreign branches offer complete trade financing facilities, including letters of credit, discounts, acceptances, collections, foreign exchange transfers of funds, and remittances abroad. Although the foreign banks have undoubtedly taken away some international business from domestic banks, they probably have also helped to expand the volume of international financing. With their large clientele of importers and exporters, these banks have found it profitable to promote trade financing activities in the United States. Some of the increased volume of trade financing has gone to U.S. banks, both directly and through participation with the foreign branches. Most domestic banks report growing levels of trade financing activity.

Competition for trade financing has probably been greater among the various foreign banks than between U.S. and foreign banks. British and Dutch branches compete with Japanese agencies and the agency of a Chinese bank for business involving Southeast Asia. Similarly, the two Israeli branches aggressively compete between themselves for U.S.-Israeli trade financing, since no U.S. bank maintains branches in Israel. Finally, branches of the European banks have been increasingly competitive with respect to trade financing involving the U.S. and various European countries.

Several foreign branches act as important depositories for U.S. dollar resources of foreign institutions and individuals. The British, Swiss, Lebanese and Israeli branches attract dollar deposits from individuals in South America, Europe and the Middle East and from their European affiliates. The British and Swiss branches are especially active in the foreign exchange and securities trading business. Investments by foreign branches in securities, especially through the third market, are becoming more prevalent. In addition, during periods of monetary ease, the British and Swiss branches, in particular, make "street" loans to the better, more stable brokers and dealers, and lay off surplus Federal funds in that market.

Since many of the branches are subject to unexpected cash drains, they prefer to keep their loans short-term. Each foreign branch considers inventory and distribution financing to be a principal component of its commercial lending business. Corporate customers are primarily those firms which have some connection with the bank's home nation. Also, many branches make loans and solicit deposits from the local office of a home airline or steamship company. Several branches indicate that they also service numerous U.S. corporations which have no ties with their own nation. Some foreign branches have men on the road who actively promote their loan service.

A number of the branches obtain commercial business through ethnic appeal. The Israeli branches are able to obtain the commercial banking business of some Jewish businessmen, and one of the Israeli banks has organized an advisory group which acts as its New York Board of Directors. The advisory group attracts other accounts for the branch through personal and business contacts of its members. To a lesser degree, the New York branch of an Italian bank attracts Italian businessmen, and the Lebanese bank services the Middle Eastern business community in New York. The Puerto

Rican branches offer their services to Spanish-speaking small businessmen.

The foreign branches also attract business by catering to particular industries. The Italian bank has a department which specializes in loans to the motion picture industry. The Israeli banks have strong ties with the diamond industry, and other banks are experts in the commodities flowing from their geographic areas of concentration. In these cases, the branches use competence acquired in one area of the world to attract similar business on a world-wide scale.

All of the foreign branches offer personal banking services. Each branch offers checking accounts, and most offer savings accounts. Every branch will make either secured or unsecured loans to individuals. Branches of the two Puerto Rican banks go further and offer installment loans. All of the branches offer corporate trust services in their home nation, and several provide safe deposit facilities. The branches do not have personal trust powers and, with the exception of the Puerto Rican banks which qualify under their Commonwealth status, are not eligible for FDIC insurance.

IV. *Subsidiaries*

Ostensibly, foreign banks establish state-chartered subsidiaries either because they desire to engage in a broad range of banking activities, typically when the alternative of branching is prohibited, or because they want to perform trust functions which complement the activities of affiliated agencies.

In California, state-chartered subsidiaries have been established by seven foreign banks to engage principally in retail banking. These banks report that the bulk of their deposits originate domestically and that most of their loans are made to local businessmen and individuals. These banks are insured by the Federal Deposit Insurance Corporation and are subject to the same restrictions and reporting requirements as are other banks in the state. In general, the asset and liability structures of the state-chartered subsidiaries are similar to those of domestic banks. Four of the California subsidiaries also operate licensed agencies in the state, in some instances under the same roof. The subsidiary form is the only viable avenue for foreign banks to receive deposits in California, since the unavailability of FDIC insurance to foreign branches effectively prevents the establishment of branches in the state. Two Japanese-controlled subsidiaries, which have been the most successful in attracting deposits largely through ethnic appeal, have opened several branches in the San Francisco and Los Angeles area.

Three of the six foreign-owned subsidiaries in New York differ in an important respect from their counterparts in California. Two of those three banks are Canadian-owned and exist principally to conduct corporate trust activities. The deposits which these subsidiaries obtain are largely, if not entirely, incidental to the banks' trust work. The Canadians are precluded from opening branches in New York because of lack of reciprocity, and their subsidiaries are intended mainly to complement the activities of agencies controlled by the same parent.

Three other foreign-controlled subsidiaries in New York—one Belgian, one Canadian and one Japanese—do a substantial retail business and their asset and liability structures are quite similar to those of domestic banks in the state. Although the six New York subsidiaries are eligible for FDIC insurance, only one Japanese bank has obtained insurance. The remaining foreign-controlled subsidiary in New York, a long-established, Greek-controlled bank, and a recently-formed subsidiary of a Japanese bank in Chicago complete the list of subsidiaries.

Although a substantial majority of foreign bank officials who have been interviewed regard the branch form as preferable, subsidiaries have certain ad-

vantages over branches. Statutory requirements and supervision are somewhat less restrictive for the subsidiaries. For example, foreign branches in New York must obtain annual renewals of their licenses, maintain "New York assets" equivalent to 108 percent of liabilities, and submit weekly reports of condition in addition to the call reports required of all state banks. Subsidiary banks are exempt from these requirements. Additionally, state-chartered, foreign-owned subsidiaries are eligible for FDIC insurance which may aid in deposit solicitation.

Yet, most foreign banks which have elected the subsidiary form have done so because the alternative of branching has not been made available. The few foreign banks which have elected the subsidiary form where branching is permissible have been primarily enticed by the relative freedom from restrictions which their subsidiary-plus-agency organizations offer in contrast to the branch form.

V. *Agencies*

In New York State, an election must be made between a branch and an agency, since foreign banks are not permitted to operate both instrumentalities. However, a foreign bank is permitted to operate both an agency and a subsidiary. Although a branch may be preferable to a state-chartered subsidiary, a subsidiary in addition to an agency may be preferred to sole reliance on a branch.

Operating with an agency, a foreign bank may circumvent a number of restrictions applicable to branches. Agencies are exempt from the fractional reserves against deposits required of branches. They may make loans greater than 10 percent of parent bank capital to individual customers. Agency assets in New York need be only 100 percent of credit balances, in contrast to the 108 percent requirement for branches. Moreover, agencies are relatively free from extensive examination.[7]

Some sources contend that for many years a substantial part of the agency's "credit balances" were the practical equivalent of deposits. In recent years, however, New York State examiners have become increasingly critical of agencies' liability composition. The supervisory authorities have sought to establish that the credit balances are legitimately related to international transactions. The conversion from agencies to branches by certain foreign banks in New York has been partially attributed to difficulties arising out of the more critical examination of agency liabilities.

Presumably, the nine banks in New York which have converted their agencies to branches since 1961 believe that the advantages of a single organization, which can receive deposits and engage in a broad range of banking functions, outweigh the offsetting benefits associated with operating both agencies and trust companies. Apparently, a number of other banks have concluded that the freedom from restrictions which agencies enjoy, coupled with the authority to receive deposits in affiliated subsidiaries, is preferable. The agency-plus-subsidiary arrangement has been selected by Canadian banks, since it is the only available alternative. Canada does not allow American banks to branch or establish agencies, and consequently, the Canadians cannot meet the reciprocity prerequisite

[7] In contrast to foreign branch examinations, the agency assessments are only peripherally concerned with the quality and composition of assets. It is contended that since the protection of depositors is not at issue with respect to agencies, detailed surveillance of assets is unnecessary.

[8] Actually, Canadian banks can meet the reciprocity requirement in New York if the law is interpreted literally. Section 202-a of the New York Banking Law provides that a foreign banking corporation may be licensed to maintain a branch if under the laws of its own

TABLE 4

Condensed Composite Balance Sheets for All Foreign Agencies Licensed in New York State (in millions of dollars)

	Sept. 30, 1965	Dec. 31, 1964	Dec. 31, 1963	Dec. 31, 1962
Number of Agencies[1]	27	24	25	27
ASSETS				
Cash and balances with other banks	$ 550	$ 449	$ 443	$ 422
Bonds and corporate stocks	559	521	450	581
Loans and overdrafts*	1,981	1,989	1,806	1,489
Customers' liability on acceptances	392	274	212	147
Due from own head offices and branches	555	559	435	525
Other assets	103	103	54	47
Total assets	$4,143	$3,898	$3,402	$3,213
LIABILITIES				
Due to foreign banks	$ 127	$ 114	$ 252	$ 341
Due to other customers	298	357	114	88
Liabilities for borrowed money	30	62	30	7
Acceptances outstanding**	208	161	117	100
Other liabilities	180	26	89	55
Total liabilities exclusive of amounts due to own head offices and branches	$ 845	$ 722	$ 602	$ 594
Due to own head offices and branches	3,298	3,175	2,797	2,618
Total liabilities	$4,143	$3,898	$3,402	$3,213
*Includes loans to brokers and dealers in securities	$ 881	$ 951	$ 914	$ 686

**Excluding acceptances held for account of own head offices and branches

Source:

1 Three agencies are included in the aggregate data which are excluded from the discussion on the ground that they are not "foreign banks." These are: American Express Company, Thomas Cook and Son, and International Banking Corporation. **Annual Report of the Superintendent of Banks,** State of New York, No. 91, 1966, pp. 196-197.

for branching in the New York State Law.[8] Similarly, subsidiaries plus agencies have been established without choice in California, where the FDIC provision nullifies branching.

As of September 30, 1965, 24 New York agencies of foreign banks reported assets of over $4 billion, of which about half were loans, approximately a fifth were investments, and almost a third were cash and compensatory balances in other banks, including those due from the head office and its branches (see Table 4). The growth of foreign agencies have exceeded by a substantial margin

country a New York bank "may be authorized to maintain either a branch or agency or may be authorized to own all the shares (except for directors' qualifying shares) of a banking organization organized under the laws of such foreign country . . ." However, a New York bank would find it difficult, if not impossible, to obtain permission from the Canadian authorities. Consequently, in exercising its discretion, the New York Banking Department has taken the position that reciprocity for New York banks to operate in Canada does not exist in fact.

that of foreign subsidiaries and international departments of domestic banks. Of special significance is the fact that New York agency assets have continued to increase, despite the fact that nine of the agencies have been converted to branches since 1961 and agency business has been constrained by the U.S. program of capital restriction.

This growth is attributable in large part to the increased volume of money market loans made primarily by the Canadian agencies to brokers and dealers in securities.

The 11 agencies reporting to the State Banking Department in California in December of 1965 held over $300 million of total assets, counterbalanced mostly by amounts due the home office and other banks. For a number of foreign banks in both California and New York, agency assets complement those of affiliated subsidiaries.

The activities of the agencies are even more varied and complex than those of foreign branches. Almost all of the agencies are active in financing trade between the U.S. and the home country. Unlike branches, they rarely become involved in financing trade between the U.S. and a third nation. Their trade financing activities consist mainly of issuing letters of credit, and buying, selling, paying, and collecting bills of exchange in connection with U.S.-home nation trade. They also handle the dollar balances and administer the dollar needs, arising in this country, of their head office and its branches throughout the world. Some agencies are active in the foreign exchange market, and others are heavily involved in the purchase and sale of securities for their home office, its branches, and related customers.

Fourteen of the 35 agencies in the U.S. annotated in Table 5 are affiliates of Japanese banks. With the exception of the Bank of Tokyo's New York agency, which acts as the fiscal agent of the Japanese government and, as such, handles sizeable amounts of official dollar balances as a "foreign exchange bank," these banks are almost exclusively engaged in financing and promoting trade between Japan and the United States. They work closely with the Japanese trading companies and are rarely involved in third-party financing or complicated money market operations as are the Canadians. More than 80 percent of the Japanese borrowings in the U.S. are short-term and directly tied to import and export transactions.

The agency form has been elected by the Japanese banks in both California and New York because of the banks' close affiliations with the large Japanese trading companies which market highly diversified groups of exports in the United States. The agencies are permitted to lend to individual trading firms amounts in excess of 10 percent of parent capital. In view of the borrowing requirements of the trading firms, the lending limits imposed on branches or subsidiaries would inhibit the Japanese banks.

Japanese bankers, businessmen, and government officials have been well received by the American banking community in their quest for financial resources. While Japanese agencies have sold CD's with less than 30-day maturities, they have not aggressively solicited balances of this type from corporate treasurers, preferring to rely on carefully nurtured credit lines with U.S. commercial banks. Outside New York, Japanese bankers have solicited loans from bankers in the Northwest, South and Midwest.

At the present time, the Japanese agencies, together with their trading firm clients, produce large and profitable trade acceptances in which American banks can invest. The agencies have done much to provide domestic banks with profitable outlets for their money and to introduce many of them to international banking. In addition to promoting exports of the trading firms, the

TABLE 5

Agencies of Foreign Banks
1966
(In New York State)

Name	Headquarters	Number of Offices
Banco de Bilbao	Bilbao, Spain	1
Banco di Napoli	Naples, Italy	1
Banco Nacional de Mexico, S.A.	Mexico, D.F., Mexico	1
Bank of China	Taipéh, Formosa	2
Bank of Kobe, Limited	Kobe, Japan	1
Bank of Montreal	Montreal, P.Q., Canada	1
Bank of Nova Scotia	Halifax, N.S., Canada	1
Bank of Tokyo, Limited	Tokyo, Japan	1
Canadian Imperial Bank of Commerce	Toronto, Ont., Canada	1
Dai-Ichi Bank, Limited	Tokyo, Japan	1
Fuji Bank, Limited	Tokyo, Japan	1
Hongkong and Shanghai Banking Corporation	Victoria, Hongkong	1
Midland Bank Limited	London, England	1
Mitsubishi Bank, Limited	Tokyo, Japan	1
Mitsui Bank, Limited	Tokyo, Japan	1
Nippon Kangyo Bank, Limited	Tokyo, Japan	1
Philippine National Bank	Manila, Philippines	1
Royal Bank of Canada	Montreal, P.Q., Canada	1
Sanwa Bank, Limited	Osaka, Japan	1
Standard Bank, Limited	London, England	1
Sumitomo Bank, Limited	Osaka, Japan	1
Tokai Bank, Limited	Nagoya, Japan	1
Toronto-Dominion Bank	Toronto, Ont., Canada	1
Total Agencies in New York State		24

(In California)

Name	Headquarters	Number of Offices
Bank of Tokyo, Limited	Tokyo, Japan	2
The Mitsubishi Bank, Limited	Tokyo, Japan	1
The Chartered Bank	London, England	2
Bank of Montreal	Montreal, Canada	1
Barclays Bank, Limited	London, England	1
Canadian Imperial Bank of Commerce	Toronto, Canada	1
The Hongkong and Shanghai Banking Corporation	Hongkong, B. C. C.	1
The Sanwa Bank, Limited	Osaka, Japan	1
Swiss Bank Corporation	Basle, Switzerland	1
Total Agencies in California		11

agencies have arranged for the purchase, shipment and financing of U.S. exports to Japan. Perhaps the most important short-term contribution of the Japanese agencies to the United States has been their highly successful promotion of U.S. exports to Japan, which have constantly exceeded imports by a wide margin.

The other agencies in New York, except for the Canadians, confine the bulk of their lending to finance U.S.-home nation trade. They generally do not attempt to compete with domestic banks in making loans to industrial and commercial borrowers in this country, except for a limited volume of loans made to U.S. affiliates, subsidiaries and branches of companies from their respective home nations. There are a few agencies on the West Coast whose principal objective is to make loans to domestic borrowers and, in some instances, to receive compensatory balances in the parent name. Since deposits booked in the parent name appear on the agency books as "due to own head office," the agencies circumvent difficulties with the state regulatory authorities who seek to prevent deposit solicitation by agencies.

It has been estimated that the five Canadian agencies in New York account for more than half of total agency assets in the state. The following factors account for the relative importance of these agencies: (1) bond flotations by Canadian provinces and municipalities have yielded sizeable U.S. dollar balances which are left with Canadian agencies (Canadian issues are exempt from the Interest Equalization Tax); (2) Canadian residents desire to hold precautionary balances of U.S. dollars whenever the Canadian exchange rate is expected to fluctuate; (3) agencies are able to attract short-term balances in behalf of the parent bank by paying higher rates of interest and offering shorter maturities than domestic banks which are subject to restrictions under Regulation Q; (4) the substantial expansion of United States-Canadian trade has created substantial dollar balances held by the agencies; and (5) since fractional reserve requirements do not apply to agency operations, the Canadians have been able to create resources simply by borrowing in the domestic market in parent name, or with parent guarantees, and lending out the proceeds.

In the financing of U.S.-Canadian trade, the agencies have a substantial advantage over domestic banks in handling the Canadian side of the transaction, since Canada severely restricts the extent to which American banks may solicit business in that country. Through American agencies, the Canadians concentrate on the U.S. side of the transactions as well. The agencies have liberally purchased 180-day trade acceptances, and are willing to arrange term loans with their parent banks for high-grade U.S. customers. In return, they receive credit balances from the U.S. customers, as well as balances in some instances for the parent banks.

The Canadian agencies have been heavily committed to interest rate arbitrage and operations in the foreign exchange forward markets. Some of this activity has involved lending Eurodollars in Europe for 180 days or longer, while attracting short-term balances in the United States. This same practice has been followed with trade acceptances. Still another variation has involved selling short-term CD's while laying off this money in the form of term loans. These practices contribute to a deposit-loan structure which is potentially unstable.

For a number of years, the Canadian agencies have been extremely active in the market for loans to brokers and dealers. "Street" loans are convenient investment media for the short-term volatile balances which the agencies attract. The agencies are in a position to shave rates on these loans by virtue of several cost advantages over domestic banks. They are not subject to the FDIC assessments; they are not required to maintain fractional reserves; and they are able to attract balances by paying interest on credit balances by virtue of their exemption from Regulation Q.

The Canadian agencies are legally subject to the same restrictions and require-

ments as other agencies. They merely have cultivated several opportunities in the money market which other agencies have neglected or avoided. The existence of such risk-takers as the Canadian agencies in the New York money market has undoubtedly provided many Americans with profitable investment outlets for short-term funds.

Recent monetary developments have substantially reduced the scope of Canadian agencies' activities. The Voluntary Restraint Program resulted in a withdrawal of American-owned dollar balances in Canada. Also, under the guidelines program the Federal Reserve Bank of New York has scrutinized the U.S. dollar inflow-outflow position of the agencies. Finally, higher interest rates in the United States, growth in the short-term segments of the commercial paper and CD markets, and higher ceilings under Regulation Q have made it more difficult for the Canadian agencies to obtain balances from domestic sources.

It should be noted, however, that agency resources have continued to increase notwithstanding these developments. Moreover, when the U.S. program of capital restriction is relaxed, the Canadian agencies may again enjoy competitive advantages over American institutions in view of their comparatively liberal regulatory environment.

VI. *Balance-of-Payments Factors*

There is a paucity of published data concerning the balance-of-payments effects of foreign banks operating in the United States. While agencies, branches, and subsidiaries of foreign banks in the United States have filed monthly reports of claims on foreigners and liabilities to foreigners under the Treasury-Federal Reserve regular reporting program, the data have been aggregated with data pertaining to purely domestic banks; for both foreign-exchange reporting and balance-of-payments purposes, American affiliates of foreign banks are regarded as "domestic banks." Notwithstanding the data limitations, however, a number of payments effects are suggested by the characteristic behavior of foreign banking institutions.

Although payments gains can be traced to the initial nonliquid capital invested by foreign banks in establishing offices in the United States, these investments and the resulting gains have typically been quite small. Far more important payment effects relate to the fact that the U.S. offices of foreign banks function with both domestic and foreign liabilities. Several foreign bankers, who have been interviewed, claim that their U.S. offices obtain large percentages of their resources from foreign dollar holders, although the assets of these offices consist primarily of loans and investments made in the United States. To the extent that the foreign-owned dollars, which these banks have attracted, would otherwise have remained abroad, the existence of the U.S. offices has aided in reducing the payments deficit as computed on the reserve-settlements basis.

The investment activities of certain of these institutions have also aided the U.S. payments position. Several foreign banks have actively encouraged foreigners to purchase U.S. securities.[9]

Most of these institutions concentrate on the financing of imports and exports between the United States and their home nations or third countries, but it is impossible to ascertain to what extent these activities have been the cause, rather than the result, of trade patterns among other countries and the United States.

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[9] The advantages to the United States of increasing foreign ownership of U.S. securities has been stressed by the report of a Presidential task force. See "Promoting Increased Foreign Investment in United States Corporate Securities and Increased Foreign Financing for United States Corporations Operating Abroad," Report to the President, Washington, D.C., 1964.

Foreign banking institutions have been asked to abide by the spirit of the Voluntary Restraint Program although this program does not specifically apply to them. On the basis of monthly reports filed with the Federal Reserve Banks, the Reserve Board has concluded that they generally have cooperated with this request. The restraint program's guidelines have restricted the pace of increase in foreign loans which these institutions can make, and, thereby, the amount of import financing which they can accommodate. According to officials of various foreign banking institutions, the program has compelled foreign banks to search for export financing opportunities to fill the gap.

In summary, the U.S. offices of foreign banks have mobilized some foreign-held dollar balances which have been used by the banks to acquire nonliquid assets in the United States and to finance trade. The foreign banks have helped the U.S. balance-of-payments to the extent that they have provided additional financing for U.S. exports (or substitutes for U.S. resident financing) with the deposits they have obtained from foreign residents.

VII. *The Regulatory Environment*

In the absence of Federal authority to permit foreign banks to enter the United States, foreign banks have had to approach the states for banking privileges.[10] In response to these requests (and, in some instances, to pressures by domestic banks which have supported liberalization of state laws), seven states have made legal provision for some degree of foreign banking within their boundaries. (The Appendix compiles a list of states and corresponding legislation pertaining to foreign banks.) In general, the states have treated representative offices, subsidiaries, agencies and branches of foreign banks as distinct entities requiring different types and degrees of supervision.

Except in California, it has been unnecessary for foreign banks to license a representative office under the presumption that the representative office will not engage in banking functions. Foreign banks establishing state-chartered subsidiaries have generally been licensed and supervised in a manner similar to that applied to domestic banks. Although there is some variation among the states, foreign banking institutions are required to establish a board of directors, comprised partially (or entirely) of residents of the state.

The three states which have licensed agencies of foreign banks have based their supervisory criteria on the assumption that these institutions would not accept deposits within the state. It is the general premise of the supervisors that, since foreign agencies bring their own resources to the states rather than attracting them locally, close surveillance of their investment and lending activities is unwarranted. For example, it is considered to be unnecessary for examiners to analyze loan types and lending limits of agencies, as long as state laws are not violated. The typical agency examination is restricted primarily to determining whether the agency is complying with fidelity bond coverage and capital provisions and is submitting accurate reports as prescribed by law. An exception to the characteristic examination is made for agencies operated in conjunction with subsidiaries chartered in the same state. In these instances, attempts are made

[10] In at least one instance, non-U.S. residents have obtained a charter to establish a subsidiary national bank in the United States. In accordance with the provisions of the National Banking Act, all the directors of this bank are U.S. citizens, and the lending limits are governed by the equity capital invested in the subsidiary by the foreign owners. Because of these and other provisions in the Act, which was originally intended to apply to domestic bank applicants, virtually all foreigners regard the establishment of a subsidiary national bank as an unattractive instrumentality for entering the American market.

to deduce whether delinquent loans, or loans made to officers, or excessive loans emanating in the subsidiaries have been transferred to agency books in violation of state laws.

In the New York State Law, a provision does exist which states that an agency's New York State assets must exceed corresponding credit balances. However, the term "New York State assets" has been interpreted quite broadly. Virtually any loan, either domestic or foreign, which ultimately is payable in dollars in New York qualifies as a New York State asset. Since virtually all of the claims of agencies (or branches) in New York qualify as New York State assets, the 100 percent restriction has not proved onerous.

In both New York and California, where all but one agency is located, applications for agency licenses appear to be processed in a manner quite similar to branch applications.

Traditionally, officials have regarded branches of foreign banks as the most difficult to supervise. The authorities have feared that they could not adequately protect the depositors in these branches since the parent institutions are entirely outside their jurisdiction for examination and supervision. It has been argued that assets of branches could be withdrawn by the foreign parent with comparative ease, and once removed, would be difficult to recover in suits initiated in American courts.

Since American banks have long been permitted to open branches in most foreign countries, and a serious question of reciprocity was involved in prohibiting the establishment of foreign branches in the states, careful attention was devoted to the drafting of New York State's Branching Amendment in 1960. Largely because of the importance of the reciprocity issue, interested parties endeavored to draft a bill which would provide adequate protection to foreign branch depositors notwithstanding the problem areas feared by the supervisory authorities. Since virtually all foreign branches are located in New York (and if branching is eventually permitted in California, the applicable restrictions will be almost identical to those in New York), the protective provisions may be regarded as typical.

As we have noted, the New York State Law provides that a branch must maintain within the state dollar assets equivalent to at least 108 percent of all its liabilities, including deposits and acceptances. The 8 percent in effect, represents the capital of the branch. Additionally, 5 percent of such assets must be segregated and maintained under a restricted deposit agreement in another domestic bank in cash or government securities, subject to withdrawal only with the consent of the Superintendent of Banks. Moreover, in the event of financial difficulties, creditors of the branch are preferred with respect to the assets of the branch without prejudice to their right to share in the other assets of the bank.

In effect, provisions in the New York State Branching Amendment require that branches be operated as if their liabilities extended only to branch depositors. Depositors in the New York branch have no right to draw on their accounts at the parent bank or any of its branches and, conversely, depositors at the parent bank or at any of its branches have no right to draw on their accounts at the New York branch. This separate-entity concept of deposits in branches versus parent institutions has been fully recognized by the courts in this country. The Federal Reserve Board in a recent ruling has determined that a branch of a foreign bank operating in the United States (as distinguished from the parent institution) falls within the terms "any bank" in the second sentence of Section 22(g) of the Federal Reserve Act. Thus, in practice and in law, the branch can be, and for most purposes is, treated as an entity separate from the parent institution.

Any act involving removal of assets from a foreign branch in violation of the 108 percent requirement subjects the offending persons, whether officers, directors, or employees of the branch, to the penalties of New York law. This provision is designed to prevent the improper transfer of branch assets out of the country, irrespective of any order to the contrary emanating from the parent bank or its other branches.

These provisions are designed to secure the position of branch depositors, irrespective of parent bank activities in other parts of the world. To facilitate the supervision and examination of the branch as an independent entity, the law requires that foreign branch books and records, as well as assets and liabilities, be segregated and kept separate from the books, records, assets, and liabilities of the head office or any other branches of the bank. As a condition of entry, the parent bank must submit to these requirements.

The regulatory authorities in New York believe that they can responsibly grant licenses and supervise foreign branch banks without exercising any supervision or control over the parent institutions. A contrary position has been taken by the Superintendent of Banks in California. It is his view that only California banks should be allowed to receive deposits in the state. Although he does not object to foreign ownership of banks in California, he contends that foreign banks which receive deposits in the state should be required to operate as separately capitalized entities in the state under the control of local directors. Only if the foreign institutions deposit substantial capital in the state, and if directors of the foreign-owned bank are local residents whose amenability to local civil and criminal control is certain, does he feel that he can exercise effective control to protect depositors.

A provision to permit foreign branching in California was nevertheless passed in 1964 over the objections of the State Superintendent of Banks. Under Statute 1756.1 of the Amended Banking Law, a foreign bank is prohibited from accepting deposits in California until, among other provisions, it has met the following requirements:

> It has been approved for FDIC insurance, and has on deposit with the state treasurer in addition to the deposits required under Section 1751(g) such assets as the Superintendent may from time to time deem necessary or desirable for the maintenance of a sound financial condition, the protection of depositors and the public interest, and to maintain public confidence in such business of such foreign banking corporation.

Thus, even if branches of foreign banks become eligible for FDIC insurance, the Superintendent of Banks has broad discretionary power regarding the operations of such institutions in the state. The Superintendent has indicated that in the event that foreign banking institutions are able to meet the FDIC eligibility requirement, conditions imposed on the operations of branches in the state are likely to be sufficiently restrictive to keep this form of organization unattractive. For all intents and purposes, therefore, California is likely to remain closed to foreign branching.

VIII. *Recommendation*

In its consideration of legislation directed to the Federal control of foreign banking offices, the Congress now faces the necessity of making two decisions. The first, obviously, is whether Federal legislation in this field is necessary or desirable. A subsequent decision pertains to the types of legislative measures needed to control foreign bank operations.

At the present time, one or more of the Federal authorities (the Comptroller of the Currency, the Federal Reserve and the FDIC) supervise activities of banking institutions in this country which account for 98 percent of deposits. Cur-

rently, none of these authorities has jurisdiction over branches or agencies of foreign banks. Thus, virtually the only banking institutions in the country falling outside the scope of Federal purview are the representative offices, agencies and branches of foreign banks. Information obtained by Federal authorities pertaining to the activities of these institutions is made available, with a single exception, as a courtesy of the state banking departments.[11]

It seems inappropriate that the activities of foreign branches and agencies have been examined only by state authorities, who are primarily interested in protecting depositors and in seeing that state banking laws are not violated. A large proportion of the activities of foreign branches and agencies involve international dollar inflows and outflows and failure to examine the banks with specific references to these considerations appears especially unfortunate during a period in our history when the Interest Equalization Tax, the voluntary restraint program and other restrictive measures have been introduced.

International considerations aside, it is desirable for activities of foreign agencies to be examined more intensively in view of the importance which these institutions play in our money markets, and since a variety of their activities is subject to more liberal restrictions than those of domestic banks. The fact that these agencies presumably do not receive deposits exempts them from close scrutiny. Yet, as has been suggested, their liabilities categorized as "due to own head offices and branches" may to a significant extent consist of deposits of Americans booked by the agencies in parent name. Although conceivably unimportant to state authorities, the types of loans and investments made by these institutions markedly influence the character and competitive conditions of U.S. financial markets, regardless of whether the resources are obtained from domestic depositors or from their parent institutions. Moreover, certain advantages which the agencies have over domestic banking institutions cannot be properly appraised at the state level. For example, certain foreign banks operate agencies and subsidiaries in several states and, in part, their objective is to capitalize on opportunities to transfer resources among these various affiliated institutions. A national perspective is required to assess the interrelated activities of these affiliated banking offices.

The states are confronted with an administrative problem in examining the activities of foreign banking institutions. To a large extent, their activities differ from those typical of domestic banks. Knowledge and skills pertaining to international banking are required, both to appraise applications of foreign banking institutions and to examine and regulate the institutions, once licensed. Different criteria than those applied to domestic banks are required to assess whether convenience and advantage are served by admitting foreign banks. For example, greater emphasis must be given to trade implications, national and international monetary considerations, and questions of banking reciprocity. New forms for reporting financial activities are required in order to discern the characteristic functions performed by foreign banks. The need for new standards and yardsticks has only been partially recognized, and only in those states where foreign banking institutions currently operate. Because the examination and regulation of foreign banks constitute

[11] In order that their acceptances may qualify under the Federal Reserve Act, some foreign branches submit monthly reports regarding the composition of their bankers' acceptances. It should be noted, however, that some foreign banks are uninterested in selling the acceptances they create (many of which would not qualify) and, therefore, do not participate in the Federal Reserve Banks' acceptance surveys.

such a small proportion of supervisory activities, even in the states where most foreign banks are concentrated, substantial supervisory specialization in the international field has not been developed. A number of foreign banking institutions report a distinct tendency on the part of state regulatory authorities to assess foreign requests for licenses, and subsequently to examine foreign banks, largely as though they were domestic banks. This administrative problem is most serious in those states where few foreign banking institutions are located. And the problem is likely to become even more acute if, and when, additional states begin to extend foreign banking privileges.

For the reasons enumerated above, the legislative proposal to place offices of foreign banks under Federal control is logical. The examination and supervision of foreign banks by Federal authorities should help to assure that foreign policies and the broader national and international implications of foreign bank activities are adequately appraised. Also, the provision for Federal examination of foreign banks should facilitate evaluation of appropriate techniques for such an examination.

Assuming that Congress determines that Federal legislation is desired, it must then determine whether foreign banks are to have the same powers as domestic banks. At the present time, certain aspects of our laws discriminate against offices of foreign banks; for example, foreign branches are ineligible for FDIC insurance. Other aspects of our laws offer foreign banking offices privileges denied domestic banks. The proposed bill which brings foreign banking institutions under the general coverage of the National Banking Act with primary jurisdiction in the Comptroller of the Currency provides for the study and possible elimination of these inconsistencies.

The past performances of foreign banking offices would seem to support the contention that foreign banks be offered the same privileges as domestic banks so long as they abide by U.S. laws. These banking institutions have contributed to the development of New York and San Francisco as centers of international finance and trade. A by-product of this development has been the expansion of trade in which U.S. firms have been important participants, and which several domestic banks have financed to an increasing degree. The foreign banking institutions have introduced new financial instruments in the trade financing field and, thus, have complemented the activities of domestic banks. There has been little evidence or complaints of competitive developments unfavorable to the domestic banks, and most banks report improved correspondent relations since the establishment of foreign banking institutions here. In certain instances, the foreign banks have provided personal banking services to ethnic groups who otherwise would have been denied these services, and who probably would have held some of their money outside the banking system. Also, it has been noted, the existence of foreign banks here probably has had favorable payments effects.

APPENDIX

Laws Pertaining to Foreign Banking in the Various States (April 1966)

At present eight states[1] specifically prohibit foreign branch banking. Washington allows only limited operations,[2] and Maine and South Carolina have statutes which refer to foreign banking in a very limited sense, neither defining the powers of a foreign bank within the state, nor defining the term—foreign banking corporation. The attached chart best indicates the nature of foreign banking in California, New York, Massachusetts, Hawaii, Oregon and Washington, the states which allow foreign branching. The chart is divided into three primary categories: type of institution permitted, powers of foreign banking offices within the state and the duration of the license grant. The remaining states have made no provisions which specifically apply to foreign banks.

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[1] Connecticut, Delaware, Illinois, Minnesota, New Jersey, Rhode Island, Texas, and Vermont.

[2] The buying and selling of exchange, coin, bullion, or securities.

State	Type of Foreign Bank		Powers					Duration of License	
	Agency	Branch *	Receive Deposits	Buy, Sell, Collect Bills of Exchange	Issue Letters of Credit	Transmit Money Abroad	Loans	One Year	Indefinite
California	X	X	X†	X	X	X	X	X	
New York	X	X	X	X	X	X	X	X	
Mass.	X	X	X	X	X		X		X
Hawaii	X			X	X	X	X		X
Oregon	X	X	X	X			X‡		X
Washington		X§							

* Branch may receive deposits. Agency or representative may not receive deposits.
† Must get F. D. I. C. approval which has not been given to date.
‡ Limited to mortgage loans.
§ Has one branch under a grandfather clause.

►PHILIP SAUNDERS, JR.

American Banks in London's Eurodollar Market

The London branches of American banks have been major participants in the Eurodollar market. This paper attempts to describe their activities in the early 1960's, and particularly their role as some of the heaviest and most persistent borrowers of Eurodollars. The Eurodollar itself is discussed only briefly here, since there is already extensive literature on the subject.[1]

Philip Saunders, Jr., is a Consulting Economist for Charles River Associates, Inc., in Cambridge, Massachusetts. He is greatly indebted to officers and foreign exchange dealers of the branches of several American and Japanese banks and to a foreign exchange brokerage firm in London. Conversations with them provided the background for much of the descriptive material in this paper. The author, however, is wholly responsible for any errors in the descriptions and for the analysis and conclusions.

[1] For a comprehensive summary and bibliography, see G. C. Martenson, *The Euro-Dollar Market,* Boston: Bankers Publishing Company, 1964.

Currently, there are 13 American banks with branches in London, not counting banks maintaining representative offices, which are not allowed to accept deposits. In the early 1960's, there were only nine such branches, belonging to the largest banks in New York (6), Chicago (1), and San Francisco (1), plus The American Express Company. Most of the American branches are of long standing, but only since World War II have they come into their own. Originally, they were established to serve large American customers who had business in England. In some cases, they did little more than handle the personal accounts of individuals and of the officers of corporate customers. Eventually, the main business of the American branches came to be banking for the subsidiaries of American corporations. The branches have been staffed almost wholly by Englishmen.

The American branches, generally, did not take an active part in English bank-

ing. Many head offices took the view that any participation in British banking should properly be through British correspondents. Direct dealings with English clients, they believed, might strain correspondent banking relationships, and thus jeopardize the balances held in the U.S. by London banks. They also feared the risks, real or imagined, of foreign banking. Since the war, however, the importance and independence of American branches has increased, particularly since the advent of the Eurodollar market which the U.S. banks entered as early as 1958 and as late as 1962.

The American branches generally were able to borrow Eurodollars at a margin below the rate available to European banks, evidently because some lenders believed that the U.S. banks were better risks than their European competitors or that dollars were properly the business of U.S. banks. This margin varied, but was around an eighth or a quarter of a percent. The Eurodollar depositors in American branches do not appear to have differed from suppliers of Eurodollars generally—banks, central banks, and large corporations.[2]

At the end of 1963, deposits of all kinds in American branches were $1.9 billion, of which 73 percent came from outside the U.K.[3] Probably, the proportion of Eurodollar deposits owned by U.S. residents was higher at the American branches than at their European competitors. The Americans had the advantage of prior banking relationships, and were better known to U.S. firms. Since they were not restricted by the Regulation Q ceilings applicable to domestic operations, the London branches could pay rates competitive with U.S. bill yields, and they arranged to take as time deposits the funds that customers in the U.S. were threatening to withdraw and place in the money market. Aside from deposits arranged by the head offices and borrowing to satisfy occasional head office requests for funds, American branches had a fairly free hand in their Eurodollar borrowing operations.

The Eurodollar lending policies of American branches varied. Some branches carried on a full range of lending activities. Others lent only to banks or to finance trade, or refused to lend to correspondent banks, or had other restrictions on their activities.

Branch lending operations are generally conducted under fairly specific instructions from the head office. There are lines of credit and restrictions on the amounts to be loaned to various categories of customers. These, in turn, are subject to the aggregate lines of credit extended by the bank as a whole.

Eurodollar deposits were put to four uses: loans in the interbank Eurodollar market; swaps into foreign currency loans; loans to corporate customers; and repatriation to the bank's head office. There is no evidence that American banks have also bought foreign currencies and loaned uncovered. Matching of spot with forward positions is not always feasible, but, insofar as possible, the banks have covered their foreign currency purchases.

Because the American branches borrowed at the lowest rates, they were in a good position to act as intermediaries and relend to other banks. As a reflection of this activity, balances with other U.K. banks owned by the American branches rose from $32 million to $260 million between the end of 1959 and the end of 1963.[4] However, the U.S. banks do not appear to have played the role of intermediaries between initial lenders and European banks as extensively as they might have. This is probably attributable to the fact that the branches had more

[2] Bank for International Settlements, *Annual Report*, Basle, No. 34, June 1964, pp. 131-134.

[3] Bank of England, *Quarterly Bulletin*, September 1964, p. 224.

[4] *Ibid.*

profitable uses for their funds, and were generally unwilling to operate on the very small margins open to traders in Eurodollars. There have been reports that London banks dealt with spreads between Eurodollar deposit and loan rates of ⅛ percent or less, which was below the level generally acceptable to U.S. banks.[5]

The use of dollar swaps into foreign currencies varied from bank to bank. Sterling was the currency usually swapped. Favorite short-term sterling outlets were deposits with U.K. local authorities and loans in the discount market. At the end of 1963, American bank loans to these two groups were $19 million and $67 million, respectively.[6] Eurodollars were also swapped to make commercial loans in sterling. At least one branch customarily used most of its dollars in London for swaps and sterling loans.

Dollar loans in London were primarily to foreign subsidiaries of U.S. corporations. Some American branches were constrained by their head offices not to lend at rates lower than the head offices were charging the borrower in the U.S., although it is reported that this constraint has become less prevalent in recent years.[7] To compete for dollar business, the American branches have had, like their European competitors, to lend at rates below New York rates.

The largest use of Eurodollars by U.S. branches has been relending to the head offices. In some cases, all Eurodollars have been remitted to the U.S.; in other cases, they have been remitted only as a stop-gap until the funds could be placed in Europe, or only to supply the head offices with temporary liquid funds. So far as this study can determine, all of the American banks were net borrowers in the market. These net borrowings appear as U.S. deposit liabilities to the British banking system.[8]

The borrowing American bank acquires a deposit at another American bank. Unless the depositary bank is an out-of-town correspondent and the borrower chooses to carry the deposit as a correspondent balance, the deposit is withdrawn and paid for by a transfer of reserves at a Federal Reserve bank. If the bank accepts Eurodollars which are a claim on one of its own demand deposits, the result is an increase in the bank's time deposits at the expense of demand liabilities. There is a small compensation for the increased interest expense, in that the deposits have been shifted abroad and appear in domestic banking only as liabilities of the head office to a branch. Since no reserves are required for liabilities to a bank's own branches, the required reserve-deposit ratio of the domestic bank is reduced.

It is difficult to determine how much American branches have, in fact, remitted to their head offices, because of the presence of other volatile items in the U.S. deposit liabilities series—particularly, loans to New York by Japanese and Canadian banks in London.

Since Japanese foreign trade is financed primarily in dollars, the Japanese banks do a large dollar business. They centralized control of their dollar operations in their American branches. Any dollars borrowed in London were deposited with the New York offices. A varying but small proportion of the dollars were forwarded to Tokyo for swap into yen. The usual percentage swapped out of total borrowings in London has been estimated at around 20 percent.[9]

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[5] P. Einzig, *The Euro-Dollar System*, London: Macmillan & Co., Ltd., 1964, p. 37. G. C. Martenson, *op. cit.*, p. 72.

[6] Bank of England, *op. cit.*

[7] G. C. Martenson, *op. cit.*, pp. 78-79.

[8] U.S. Treasury, *Bulletin*, monthly, short-term dollar deposit liabilities to U.K. banks and official institutions as reported by U.S. banks.

[9] This estimate was by a banker well-qualified to speak of dollar-yen swaps, but the figure must be accepted as it was given to the author —a very rough guess.

The vast bulk of the dollars were relent to finance Japanese trade. The banks borrowed in London to supplement the much larger volume of funds obtained from loans or acceptance credits extended by U.S. banks.[10]

At various times, Eurodollar claims on the U.S. by London probably contained substantial loans to the American money market by banks in London, mostly Canadian banks, through their New York and San Francisco agencies. To earn yields competitive with London rates, the Canadian banks made commercial loans and were particularly active in making brokers' loans.[11] There are no reliable published rates on call loans to stockbrokers in New York, so that it is impossible to test for interest sensitivity of deposits to call money rates. Altman's study of Canadian bank lending in New York indicated that the chartered banks' street loans fluctuated positively with total stockbroker loans.[12] The loans rose and fell with the stock market, indicating either that the supply of call money from foreign banks was elastic or, much more probably, that the rates rose with demand, attracting money from abroad particularly from Canada and London.

Estimates as to what percent of all U.S. banks' dollar borrowings in London were sent back to the head offices are unreliable. They vary from 50 to 80 percent. Whatever the amount, it probably declined, since dollar deposits of U.K. banks and official institutions displayed no particular trend after 1961, while total Eurodollar volume increased.[13] An alternative explanation of the divergence of the two sets of data is that the American banks' share in the market decreased, but this seems unlikely since total lending in all currencies of U.S. banks' London branches was increasing.[14] However, one would expect the Americans to have increased their lending in Europe as their familiarity with European banking increased. Since 1964, the trend may have reversed, as money has become dearer in the U.S.

United States banking operations in the London Eurodollar market first began on a large scale in 1960. This increased activity, in addition to the advent of the Japanese banks in the market, caused U.S. deposit liabilities to the British banking system to rise in that year from the $200-$300 million level where they had fluctuated since 1952, to the $1 billion level at which the deposits fluctuated through the early 1960's. F. H. Klopstock reported that American branch banks abroad owned approximately $500 million of dollar deposits in the U.S. at the end of 1960.[15] Practically all of the deposits were owned by branches in London. These were part of a total of $900 million in deposits, $200 million of which antedated the Eurodollar market and probably were normal banking and Exchange Equalization Account working balances. By the end of 1963, the general level of deposits had risen to $1 billion. Of this sum, the borrowings of the Japanese banks accounted for around $400 million.[16] Allowing a probable $100 million or less for the Canadian banks, and perhaps some miscellaneous

[10] F. H. Klopstock, "The International Money Market: Structure, Scope and Instruments," *Journal of Finance*, May 1965, p. 204.

[11] O. L. Altman, "Canadian Markets for U.S. Dollars," *Factors Affecting the United States Balance of Payments*, Washington, D.C.: U.S. Government Printing Office, Studies for the Subcommittee on International Exchange and Payments of the Joint Economic Committee, Congress of the United States, 1962, p. 533.

[12] *Ibid.*, pp. 534-535.

[13] Bank of England, *Quarterly Bulletin.*

[14] *Ibid.*

[15] F. H. Klopstock, "A New Look at Foreign and International Banking in the United States," *Private Financial Institutions*, Englewood Cliffs, New Jersey: Prentice-Hall, Inc., Studies for the Commission on Money and Credit, 1963, p. 374.

[16] G. C. Martenson, *op. cit.*, p. 40.

increase of dollar holdings by U.K. banks and the Exchange Equalization Account, the American branches would have owned $300-$400 million.

Conceptually, the Eurodollar deposits at London branches of the U.S. banks can be separated into those taken at the going rate for U.S. banks from regular customers, and those solicited in the market. The "unsolicited" funds were by far the larger portion of the total. The banks took these Eurodollars much as banks take savings deposits. Probably an American dealer in London shaded his rates only enough to maintain a flow of incoming deposits sufficient to meet his branch's lending requirements and to avoid violent fluctuations in the account with the head office. Since all the branches borrowed more than they relent in Europe, the branches had a surfeit of dollars. The Eurodollars actively solicited in the market were borrowed on instructions from the U.S. offices.

There is some statistical evidence that this conceptual division had some basis in practice. The $1 billion plateau upon which the deposits in the U.S. of the British banks and official institutions fluctuated after 1960, suggest that there was a hard core of deposits which were interest insensitive within the spectrum of post-1960 rates. Nonetheless, the deposits were highly inversely correlated with the Eurodollar rate (see Table 1), indicating a high degree of sensitivity to the Eurodollar rate of a portion of the dollars lent from London to the U.S. It is reasonable to suppose that some or most of these interest-sensitive dollars belonged to the U.S. banks, although it is possible that they were all owned by Japanese, Canadian, and other banks. Several least squares estimating equations were used because the function shifted several times as the market became larger, and as the American and the Japanese banks in the market increased in number and became more active.

TABLE 1

Regression Equations

Dependent variable: U.S. dollar deposits of U.K. banks and official institutions (1).

Explanatory variable: Three months' Eurodollar interest rate (2).

Period	Equation and standard error of estimate	R^2
1958	655 — 138.93 (19.74)	.832
Jan.-Oct. 1959	651 — 97.93 (12.73)	.881
July 1960-Mar. 1962	1703 — 195.51 (33.29)	.645
June 1962-1963	2760 — 441.84 (45.34)	.848

(1) Millions of dollars. Month-end observations. Source: U.S. Treasury, **Bulletin.**

(2) Percent per annum. Prior to April 1959, the quotations are for a date toward the end of the month. Source: Mr. F. H. Klopstock of the Federal Reserve Bank of New York, who obtained the data from Brown, Shipley and Company, merchant bankers in London. Starting with April 1959, the rates are monthly averages of daily quotations. Source: Mr. B. J. Roberts of R. P. Martin Co., London foreign exchange brokers, and one of the American banks in London.

The inverse correlative can be viewed in two ways, neither contradictory. First, banks, including American banks, borrowed Eurodollars when they were cheap and avoided borrowing when they were dear. Second, a low Eurodollar rate was a sign of a relatively large supply of dollars in Europe. Deposits at the American branches increased while credit demands abated. The branches had more unloaned dollars and increased their remittances to the U.S.

Sensitivity of American banks to interest rates was particularly noticeable in the very short end of the Eurodollar market. Unlike European banks, especially German banks, American banks did not use the Eurodollar market regularly as a standard money market in which to buy and sell short-term funds to adjust their reserves.[17] However, there were

[17] For example, see Deutsche Bundesbank, *Monatsberichte*, October 1963, pp. 3-6.

periods in which some American banks borrowed dollars in London rather than in New York because credit was temporarily in short supply in the U.S. Examples of such periods were 1959-1960, when short-term rates in the U.S. were very high, and immediately after the increases in the discount rate in 1963, when the rise in short-term rates decreased bank liquidity by lowering the values of their portfolios. Because of the lack of data on rates of overnight Eurodollars, it is difficult to compare their cost with the cost of Federal funds, but the position of the Eurodollar market is such that normally the Federal funds rate should be lower, providing no incentive to borrow in London. This changed somewhat after November 1964. Credit tightening increased the demand for Federal funds by New York banks—so much so that they became regular borrowers of slightly more expensive short-term Eurodollars rather than persistent debtors of Federal funds. To procure the necessary Eurodollars, they had to narrow or eliminate the discount below the rate for European banks usually paid by American banks. At least one U.S. bank refused to pay more than the Federal funds rate for dollars to be remitted to the U.S., and thus was priced out of the short end of the market.

Another example of short-term operations of the American banks in London was borrowing, or refusing to lend, overnight money on Thursday. When the American depository banks of both the Eurodollar lender and borrower are in New York City, the transaction is processed through the New York Clearing House on the day of the loan, and payment is made on the following day by a transfer of reserves at the New York Federal Reserve Bank. The reserves are transferred from the account of the lender's depository bank to the account of the borrower's depository bank. When overnight Eurodollars are borrowed on Thursday, the transaction is settled between the New York banks by transfers of Federal funds on Friday. Also, on Friday, the overnight Eurodollars are repaid, but settlement between the New York banks for the repayment is not made until Monday. The deposit and, more important, the reserves, stay over the weekend with the New York correspondent of the borrower, despite the fact that the Eurodollar loan was repaid on Friday and the original lender again has the dollars completely at his disposal.[18]

This phenomenon had two effects on the market. First, it made the London branches of New York banks unwilling to lend overnight on Thursday, because the loan lost an equivalent amount of reserves until the following Monday. Second, it induced some New York banks to borrow Eurodollars overnight on Thursday through their branches in London, in order to have the reserves from Friday to Monday. Since the alternative method of acquiring reserves was to borrow Federal funds, paying interest for Friday, Saturday, and Sunday nights, a New York banker could afford to pay up to three times the Federal funds rate for overnight Eurodollars on Thursday, if he knew that he was going to be short of reserves over the weekend. The inevitable result was that overnight Eurodollars were dear on Thursday, occasionally costing as much as 6 percent. It is unclear as to when the possibilities inherent in Thursday borrowing were recognized, but, judging from the rates collected for this study, which show overnight rates irregularly and then only when they deviate seriously from the call rates, there do not seem to have been shortages of Thursday night money prior to 1963.

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[18] For a more detailed account of Thursday borrowing, see E. Block, *Euro-Dollars: An Emerging International Money Market*, New York: New York University Graduate School of Business Administration, The Bulletin, No. 39, April 1966, pp. 15-21.

TABLE 2

Comparative Interest Rates

	Eurodollars (1)		U. K. Three Months Rates Adjusted for Forward Cover (2)		New York Bank Yields (5)	
Year	Call	Three Months	Local Authority Deposits (3)	Bank Loans (4)	On Loans	On Earning Assets
1958	2.10	2.64	n.a.	4.05	4.40	3.68
1959	3.30	3.81	n.a.	4.97	4.83	4.15
1960	3.67	3.94	3.99	5.22	5.31	4.69
1961	2.86	3.74	3.68	4.16	5.07	4.33
1962	3.17	3.60	3.75	4.64	5.10	4.40
1963	3.50	4.19	3.80	4.50	5.00	4.38

(1) Annual averages of monthly averages of daily rates. Source: See Table 1.
(2) Spot and forward rates are monthly averages of daily rates. Source: **Federal Reserve Bulletin,** monthly, and Samuel Montagu and Company. **Review of Foreign Exchanges,** London, fortnightly.
(3) Annual averages of rates on last Friday of each month. Source: Central Statistical Office, **Financial Statistics,** London: Her Majesty's Stationery Office, monthly.
(4) Bank rate plus one percent. Source: **Ibid.**
(5) Annual averages of loans and of loans and investments for the last Wednesday in each month divided into annual incomes from those assets. Source: **Federal Reserve Bulletin.**

Table 2 gives a picture of the returns available on some types of loans that could be made with Eurodollars. The yields appear to be lower in London. The U.K. rate on bank loans is the bank rate plus one percent, for good customers, which is shown in Table 2. The very best risks can command a mark-up of only ½ percent over bank rate.[19] Since the U.S. branches in London deal mostly with prime risks, the rate shown in Table 2 may overstate slightly the return to the U.S. banks on sterling loans. Despite the lower yields in London, the actual profit may have been higher than in New York. The Eurodollar operations of the banks added little to overhead expense, and the London business of American banks was with large customers whose accounts had lower overhead and service costs per dollar of deposits and loans than the average domestic U.S. account. Regardless of whether the dollars were relent in Europe or in the U.S., the spread between the Eurodollar rate and the lending rate was small. The relending was profitable only because of the low marginal overhead expense associated with the Eurodollar.

From the viewpoint of the profits of the commercial banks, their borrowing of Eurodollars, whether for use in Europe or America, poses the same problem as term liabilities generally. Two studies have indicated that, other things being equal, the greater the ratio of time deposits to total deposits, the less profitable the bank.[20] This conclusion must be modified somewhat when one takes into account the relatively higher operating expenses and lower loan yields associated with demand deposits.[21] However, the modification is not as great when the time deposits are Eurodollars rather than savings accounts. Part of the modification comes from the lower unit operating expenses and higher yields associated with long-term loans. Eurodollars, unlike savings deposits, are too volatile to be relent in any substantial portion for long terms. P. F. Smith has indicated that profit

[19] Committee on the Working of the Monetary System, *Report,* London: Her Majesty's Stationery Office, 1959, pp. 46-47.

[20] J. Aschheim, "Commercial Banks and Financial Intermediaries: Fallacies and Policy Implications," *Journal of Political Economy,* February 1958, pp. 63-64. D. Carson, "Bank Earnings and the Competition for Savings Deposits," *Journal of Political Economy,* December 1959, pp. 581-583.

[21] P. M. Horvitz, "Bank Earnings and the Competition for Savings: a Further Comment," *Journal of Political Economy,* February 1962, pp. 86-87.

maximization at a given time may involve having a certain proportion of deposits on term at the appropriate rate.[22] Just what is the appropriate rate is questionable, but it is clear from his study that the optimum rate is well below the rates paid by major American banks, and also below the three-month Eurodollar rate, even after taking into account the fact that Eurodollars remitted from a branch to a head office do not require reserves.

By paying higher time deposit rates, either domestically or at foreign branches, the entire U.S. domestic commercial banking system cannot increase its deposits, nor can it increase its profitability except to the extent that the shift from demand to time deposits increases free reserves without the increase being offset by official action. The individual bank can increase its deposits only insofar as it can take deposits from another commercial bank, or from a financial intermediary which holds deposits and whose borrowers hold deposits at another commercial bank. Since most foreign-owned deposits have been with New York banks,[23] there is a strong presumption that New York banks in borrowing in London were merely shufflling a pool of deposits among themselves, exchanging demand deposits for time deposits. Conversely, there was an incentive for non-New York banks to borrow Eurodollars. Since relatively few of the Eurodollars were backed by their demand deposits, they stood to gain from a situation in which many U.S. banks were net borrowers of dollars in London.

For the New York banks as a group, the Eurodollar market could increase their profits only to the extent that the market generated its own deposit expansion and the American branches shared in this expansion. If the end commercial user in a chain of Eurodollar transactions deposits his dollars in a domestic U.S. bank, the Eurodollar market's net position with the nonfinancial community is unchanged. However, if he deposits the dollars in the Eurodollar market, the lending cycle begins again. Since there are no reserve requirements in the market, the number of times the cycle can be repeated, and the net position vis-a-vis the nonfinancial sector, are limited only by the propensity of the nonfinancial sector to redeposit in the Eurodollar market. In theory, the expansion of Eurodollars could be infinite, and the American branches could have expected to share in such an expansion. The redeposit ratio is unknown, but whatever it was, it was decreased considerably by the large repatriations of dollars from London by U.S. bankers.

The borrowing of Eurodollars by the London branches of New York banks was economically rational only when viewed as a defensive operation by individual banks trying to keep deposits. There may have been some peripheral advantages through increased business ancilliary to the Eurodollar operations. To the extent that the American branches were recipients of redeposited Eurodollars, there may have been compensating increases in deposits and earnings. On balance, however, it appears that the Eurodollar operations of the U.S. branches in London in the early 1960's widened the horizons of the banks but did little for their profits.

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[22] P. F. Smith, "Optimum Rate on Time Deposits," *Journal of Finance*, December 1962, pp. 622-633.

[23] *Federal Reserve Bulletin*, monthly.

►REED J. IRVINE and ROBERT F. EMERY

Interest Rates as an Anti-Inflationary Instrument in Taiwan

I. *Introduction*

Rampant inflation was one of the important factors leading to the downfall of the Nationalist Government of China in 1949. Some observers view the depreciation of the currency under the Nationalist regime as the most important single cause of the loss of popular support for the government and its eventual defeat at the hands of the Communists.[1]

Reed J. Irvine and Robert F. Emery are members of the Staff of the Board of Governors of the Federal Reserve System. The views expressed by the authors do not necessarily represent those of the Board of Governors of the Federal Reserve System.

[1] See, for example, T. J. Hughes and D. E. T. Luard, *The Economic Development of Communist China: 1949-1960,* London: Oxford University Press, 1961, p. 24.

The problem of rising prices continued to confront the Chinese Government when it reestablished itself on Taiwan after the Japanese surrender in 1945. The problem was exacerbated in 1949 by the large influx of refugees from the mainland. The refugees included a high proportion of government officials and military forces numbering approximately one-half million. It was not easy to see a solution to the problem of supporting this administrative and military burden from the slender resources of the overcrowded island of Taiwan. Relations between the local population and the refugees were delicate. The Government was acutely conscious that excessive taxation would alienate the local population. Consequently, a substantial budget deficit was unavoidable.

The dilemma was partially relieved by U. S. grants to pay for imports to absorb a substantial part of the excess purchasing power generated by the excessive issue of money. This assistance permitted Nationalist China to run a current account deficit in its balance-of-payments of approximately $100 million a year in the early 1950's, but it was not large enough to absorb all of the inflationary addition to the money supply. In 1950, net money supply more than doubled and wholesale prices rose by 85 percent from December 1949 through December 1950.

It was evident that self-help measures to combat the inflationary pressure were required to avoid a repetition of the monetary debacle of the mainland. The Nationalist Government endeavored to immobilize, in the form of time deposits, a substantial portion of the money being disbursed to the public. This was not a new idea. The memory of wartime compulsory saving schemes in various countries was still fresh in people's minds. However, under the circumstances, compulsory savings would have been as unpopular as additional taxation. With prices rising at a rate of 85 percent a year and the position of the Government none too secure, there was not much hope of using patriotic motives to persuade the public to put funds into bonds or savings accounts. The one alternative left was to use sufficiently attractive interest rates to induce the public to save.

II. *Introduction of Preferential Interest Deposits*

Given the prevailing rate of inflation, an extraordinarily high rate of interest would obviously be needed to encourage a large number of people to buy financial claims rather than goods with their excess money. Most governments when confronted with a similar postwar problem have been unable to overcome the widespread feeling that the price of money should be kept at a "reasonable" level even if other prices were skyrocketing. The Chinese, however, managed to break through this psychological barrier to the adoption of realistic interest rates. In March 1950, they introduced a special system of time deposits paying extraordinarily high nominal rates of interest. These were known as preferential interest deposits.

The authorities recognized that under highly inflationary conditions the public could not be expected to accept financial assets having long maturities. They, therefore, started by offering deposits of one, two, and three-month maturities.

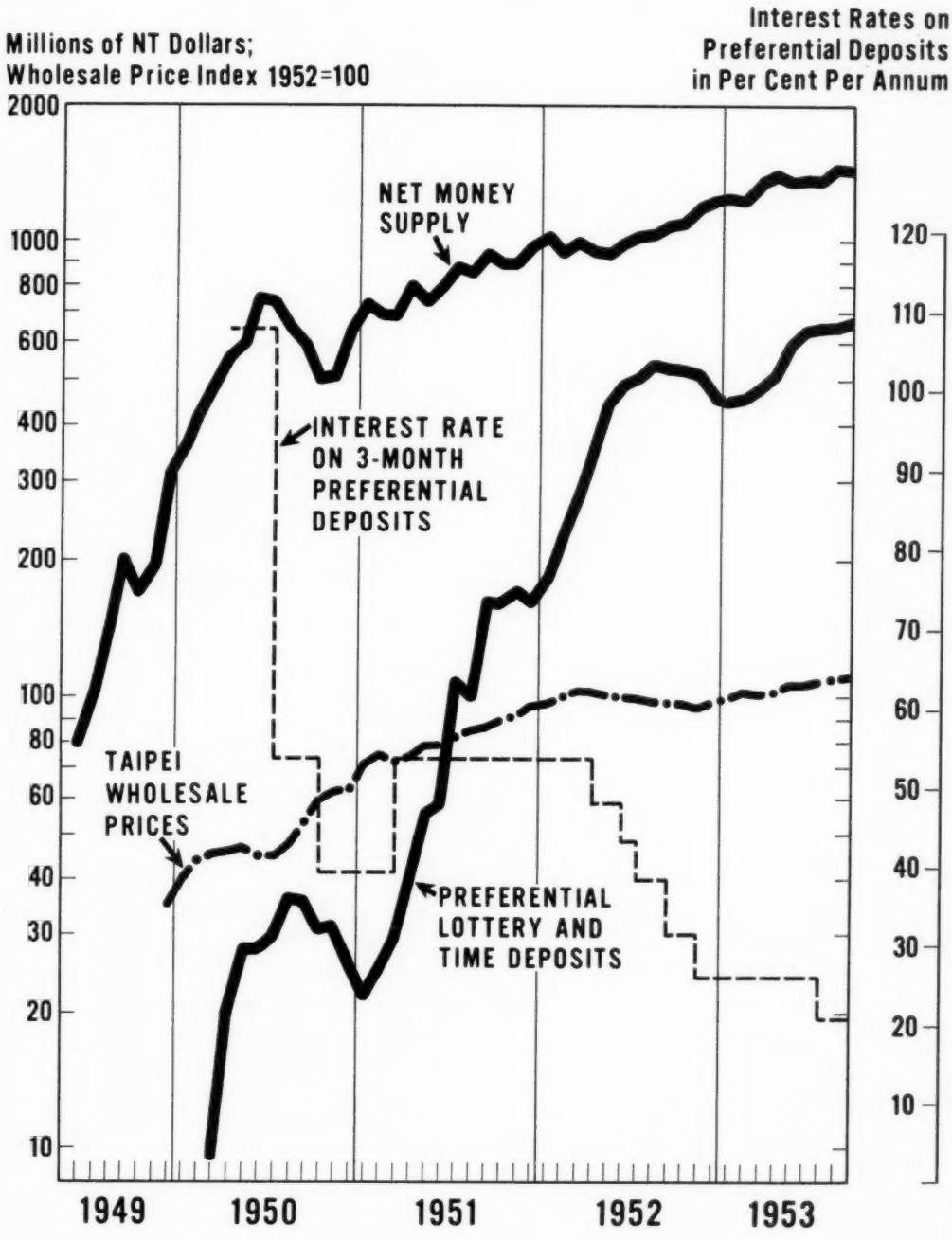
The rate of interest offered on the one-month certificates in March 1950 was 7 percent a month, which compounded monthly comes to 125 percent per annum. Even under the prevailing inflation, this rate was attractive to savers. Time deposits in the banking system quickly rose from NT $2 million[2] early in 1950 to NT $37 million by August, which was a little less than 5 percent of the net money supply (see Chart).[3]

The price increase was temporarily halted, with the wholesale price index actually declining between May and

[2] The Taiwan monetary unit is the New Taiwan dollar. Since July 1, 1960, the exchange rate has been approximately NT $40.00 to one U. S. dollar. During much of the 1950's, a complicated multiple exchange rate system prevailed.

[3] See Table 1 for details on changes in net money supply, preferential deposits and wholesale prices. The particular figures cited in the text for preferential time deposits also include relatively small sums for lottery and ordinary time deposits. The term "net money supply" is the term assigned by the Chinese during this period to the bulk of the currency in circulation and banks' demand deposit liabilities. "Gross money supply," as defined by the Chinese authorities, includes demand deposit liabilities to the Government and public organizations. "Net money supply" was considered to be preferable for the purposes of this article because it more closely matches the conventional definition of money supply.

TAIWAN:
SELECTED ECONOMIC DATA



July of 1950. The government, no doubt encouraged by this success, sharply reduced the rate of interest payable on one-month deposits in July 1950 by one-half to 3.5 percent a month. This reduction halted the rapid increase in time deposits and the total fell slightly. In spite of this, in October the government lowered the interest rate to 3.0 percent a month on one-month deposits. This cut, combined with the sharp rise in prices that had resumed in August, prompted many depositors to withdraw their deposits. Total preferential interest rate deposits fell to only NT $21 million in January 1951. In March 1951, the one-month rate was reinstated at 4.2 percent a month (64 percent per annum, when compounded monthly). The rate was held at this level for the next 13 months.

During 1951, the volume of preferential interest rate deposits rose spectacularly to more than NT $160 million by September, or over 17 percent of net money supply. The increase slackened in the final quarter of the year, but resumed momentum in January 1952. By April 1953, the total had increased to NT $350 million, 38 percent of net money supply. At that point, the Government believed that public confidence warranted introducing six-month deposit certificates at a rate of 4.2 percent a month. At the same time, it began a series of steady reductions in the rate of interest paid on deposits. The approach was more cautious than in 1950, when large rate reductions seriously reduced the willingness of savers to renew their certificates. The reductions were made during 1952 by approximately one-half percentage point every two months with the exception of one reduction at a one-month interval. When the rate was down to 3.0 percent a month, the rise in deposits was halted. However, money supply and prices had been held quite stable, and interest rates were reduced to 2.0 percent a month in the last quarter of 1952. Since time deposits began to decline after August, savers apparently became concerned at this steady downtrend in rates. Money supply began to advance again and, beginning in December, there was a renewed uptrend in prices.

The reduction of interest rates was halted for several months, and time deposits again began to rise, although at a more moderate rate than a year earlier. In April 1953, the state of confidence appeared to justify the introduction of one-year deposit certificates at a rate of 3.0 percent a month. The rise in deposits continued, with an especially strong growth in the one-month maturities. Total deposits rose to NT $650 million by July 1953, nearly 50 percent of net money supply. At this point, the authorities considered it safe to cut the interest rate again. Rates were reduced twice in the second half of 1953, bringing the one-month rate down from 2 percent to 1.2 percent, the three-month rate from 2.15 percent to 1.3 percent, the six-month rate from 2.3 percent to 1.5 percent, and the yearly rate from 3 percent to 2 percent.

This action led to a sharp switch to the longer maturity deposits, especially the six-month category. In June 1953, 75 percent of deposits were in the one- and three-month categories, but by December of that year, the six-month and one-year deposits accounted for nearly half of a somewhat reduced total.

The growth of deposits resumed in 1954, with the six-month category showing the greatest popularity. This result permitted another reduction in interest rates in July 1954, which again slowed down the growth in deposit volume for several months. The growth accelerated in 1955, total deposits rising to NT $876 million[4] in September, 32 percent of net money supply.

[4] This, and subsequent data, include the preferential time deposits only.

III. *Fears of Excess Liquidity*

The growth of deposits was such that in late 1955 and early 1956, the authorities became concerned that they represented a potential source of increased liquidity, even though 58 percent of the total carried a maturity of six months or one year at the end of 1955. It was thought that, even in the case of the long-term deposits, the privilege of borrowing and using the deposit as collateral gave all of the deposits a high potential liquidity. Therefore, in March 1956, rates were adjusted to make the shorter-term deposits relatively less attractive. The rate on one-month deposits was cut by 15 percent, on three-month deposits by 9 percent. Premiums of 15.4 percent and 12.5 percent were offered on the rates for the six-month and one-year deposits, respectively, if the depositor was willing to forego the privilege of borrowing against longer-term deposits. In June, the option was removed and all the deposits were declared ineligible for use as collateral for loans.

As a result of this change, a substantial number of depositors switched from the one-month to the higher paying three-month deposits, and from six-month to one-year deposits. By the end of 1956, 26.9 percent of time deposits were for one year. However, too many people found the premium inadequate compensation for the loss of liquidity. The number of six-month deposits, formerly the most popular category dropped sharply resulting in an overall decline in total preferential interest deposits. Thus, 1956 was the first year in which the deposits failed to show a year-end to year-end rise.

The fears that prompted this move do not appear to have been well grounded. Although the preferential interest rate deposits were responsive to interest rate changes, they did not show unusual volatility, and past trends appeared to demonstrate that the best insurance against their liquidation would be to maintain their attractiveness as investments. This might, at times, have required the adoption of a somewhat more flexible policy on interest rates.

Two-year preferential deposits were introduced in July 1957. At the same time, rates on deposits were generally lowered. The same interest rate was established for two-year deposits (1.8 percent monthly) as had previously been paid on one-year deposits. The rate on one-year deposits was reduced to 1.35 percent monthly. Nevertheless, one-year deposits became the most popular category, as one-month deposits were discontinued, and three-month deposits, which paid only 0.85 percent a month, lost favor. The volume of one-year deposits more than doubled in 1958. Six-month deposits also increased substantially, approximately doubling between mid-1957 and the end of 1958. By the end of 1958, preferential interest deposits totaled NT $1,508 million, or 29 percent of the net money supply. Half of the total was in one-year deposits and one-third in six-month deposits. Interest rates were 1.65 percent a month on the former, and 1.35 percent a month on the latter. The three-month and two-year deposits, which paid 0.85 percent and 1.8 percent, respectively, accounted for the remaining 17 percent of the deposits. All preferential interest rate time deposits were terminated at the end of 1958 in favor of regular time deposits.

These results attested to the merits of astute and bold use of interest rate policy. The savers were, at first, induced to put their money into banks at what seemed to be outrageously high interest rates for very short maturities. Actually, the real return on the savings was not outrageous at the time. Given the rate of inflation of 52 percent a year in 1951, the real return on a one-month preferential interest rate deposit was only 12 percent a year, even though the nominal interest rate was 64 percent. As inflation was brought under

control, partly by the absorption of liquidity through the preferential interest rate deposits, savers were able to obtain a higher real return even though the nominal rate of interest was lowered. For example, with prices rising only 3 percent, the real return to the saver on a one-year deposit in 1958 was about 17 percent. As depositors became accustomed to the savings habit and learned to appreciate the benefits of compound interest, it was possible to reduce greatly nominal rates of interest and to stretch out the average maturities of the deposits. These changes were of major importance in normalizing finance.

IV. *The Redeposit Feature*

The preferential interest rate policy was not the only factor contributing to greater monetary stability in Taiwan, but it was clearly helpful in absorbing the excessive liquidity created by the unbalanced budgets of the early 1950's. One major reason for the policy's success was a redeposit feature which, in effect, guaranteed the commercial banks against loss on the preferential deposits.

Commercial banks, receiving more preferential deposits than they could profitably lend or invest, were given the option of placing the excess in the Bank of Taiwan at interest rates equal to, or above, those paid by the commercial banks.[5] A large amount of the preferential deposits placed with the commercial banks were actually redeposited with the Bank of Taiwan.

This redeposit feature was not too important in 1950. However, beginning in the spring of 1951, it began to assume a greater significance. Redeposits with the Bank of Taiwan rose from NT $6 million in March 1951 to NT $129 million in September. By August of 1952, they reached NT $329 million. The main reason for the rise in redeposits was that the demand for loan funds was too weak, after 1951, to absorb all the funds pouring into banks at the special high rates.

The Bank of Taiwan reportedly paid out more in interest on these redeposits than it earned in lending or investing them, but the difference was largely offset by earnings from U. S. counterpart funds deposited with the Bank of Taiwan. In any case, the net cost to the Bank appears to have been low considering the success in combating inflation.

V. *Successful Bond Flotations*

Taiwan has continued to follow a realistic policy of using interest rates. Since the economy has enjoyed a substantial measure of price stability, it has been possible to lower deposit rates further. However, in 1959, Taiwan pioneered again in the interest rate field by issuing high interest rate government bonds. Bonds with maturities of 12 to 30 months were issued at rates varying from 9 to 18 percent. Interest on the 18 percent bonds, sold exclusively to the nonbank public, was paid quarterly and was exempt from income taxes. Commercial firms were also encouraged to raise needed capital through the issuance of bonds bearing attractive rates. For example, in 1958-1959, substantial amounts of bonds were successfully placed by business firms in the private capital market. Approximately three-fourths of these issues were guaranteed by the Government. They carried a two-year maturity and an interest rate of 20 percent. The nonguaranteed bonds also matured in two years, but carried a rate of 26.4 percent. At that time, secured and unsecured bank loans were being made at 19.8 and 22.3 percent, respectively, although private money lenders charged 36-40 percent per annum.

[5] The Bank of Taiwan is a provincial bank which, during the 1950's, performed various central bank functions for the Nationalist Government.

VI. *Conclusions*

As the Nationalist Government consolidated its position on Taiwan, it was able to improve its fiscal performance greatly. This improvement deserves major credit for the degree of recent stabilization which, in turn, owes much to the tremendous gains in economic productivity. From 1951 to 1964, gross national product per capita rose 57 percent. This growth was accompanied by a large expansion in the country's ability to earn the foreign exchange needed to supply the population with imported goods and services. In 1951, total exports were U.S. $102 million, while in 1965, they totaled U.S. $450 million. Taiwan had achieved such marked success, that the U. S. economic aid program was officially terminated in mid-1965.

U. S. economic assistance also played an important role in helping the Nationalist Government stabilize its position without depressing consumption. This assistance averaged $91.5 million a year during the crucial 1952-1955 period, according to Chinese balance-of-payments statistics. The aid amounted to about $11 per capita per annum and financed 46.5 percent of Taiwan's merchandise imports during these years. Aid became relatively less important as the scale of Taiwan's economy expanded. By 1964, U. S. aid was equal to only 14 percent of Taiwan's total imports. Foreign aid, sizeable as it was, would not have produced stability if it had not been accompanied by the self-help measures adopted by the Chinese. Experience shows that countries which pursue reckless fiscal and monetary policies can consume large amounts of foreign aid and still not achieve the degree of stability attained on Taiwan.[6]

Among the factors responsible for the success of the economic program on Taiwan was the use of realistic interest rates to encourage voluntary saving, especially in the difficult early years. It was essential, at that time, for the Government to defeat inflationary psychology and establish public confidence, without dangerously impairing political support. The preferential interest deposits rapidly absorbed a large amount of excess liquidity without creating any of the popular antagonism that would have been generated by compulsory measures. This voluntary method helped lay the foundation for the subsequent political stability and economic expansion.

The Taiwan experience has relevance for other countries. It demonstrates the feasibility of using interest rates to fight inflation even when the rate of price increase has already gotten out of hand. The Chinese showed that, even in a hyper-inflation, there is some rate of interest that will divert funds from the pursuit of goods into savings. The greatest obstacle to this intelligent use of interest rates is the tendency to focus on the nominal rate of return on money, and to ignore the more important real rate of return. The Chinese demonstrated that by giving savers a positive real rate of return, even if this necessitated setting the nominal rate at a seemingly outlandish level, they could counteract the inflationary psychosis. They had little difficulty in lowering the nominal rate to what is conventionally regarded as a more reasonable level, as they succeeded in absorbing excess liquidity and avoiding its creation. They wisely focused on the rates paid to savers, rather than the rates charged to borrowers,

[6] For example, inflation in Chile accelerated in the face of the greatly stepped up aid disbursements under the Alliance for Progress in 1961-1964. In 1963-1964, the Chilean cost of living rose 45 percent a year, compared with an increase of only 8 percent in 1961. Yet, total U.S. aid disbursed to Chile in 1961-1964 averaged $120 million a year, or $14.80 per capita. It could hardly be contended that Chile in the early 1960's was confronted with anything comparable to the economic problems faced by the Chinese a decade earlier.

to the extent of having the Bank of Taiwan at times incur losses in supporting the rates paid to savers when the banks had difficulty in finding profitable use for all the funds they were attracting. The emphasis was, therefore, on diverting funds from consumption into savings, rather than on the less popular approach of simply restraining investment. Political unpalability was, therefore, avoided.

The criticism of the high interest rate policy in Taiwan centered around the fear that the large amount of money being absorbed by time deposits would be suddenly released and overwhelm the economy in an inflationary flood. Fortunately, the Chinese have thwarted this dire prediction by not letting the inflationary psychology take hold.

The lessons of the Chinese experience have been studied by Korea, which recently departed from the policy of imposing unrealistic interest rate ceilings on savings. Results there so far appear to confirm the effectiveness of this policy as an anti-inflationary device.

TABLE 1

Taiwan: Selected Economic Data

Period	Net Money Supply (millions of NT dollars)	Preferential, Lottery and Time Deposits (millions of NT dollars)	Taipei Wholesale Prices 1952 = 100	Interest Rate on Three-Month Preferential Deposits at End of Month (percent per month)
1949				
June	76	—	—	—
July	104	—	—	—
August	139	1	—	—
Sept.	209	2	—	—
Oct.	163	2	—	—
Nov.	192	3	—	—
Dec.	312	6	34	—
1950				
Jan.	364	2	40	—
Feb.	416	2	44	—
March	487	6	45	—
April	569	20	46	9.0
May	606	28	47	9.0
June	750	28	45	9.0
July	733	30	45	4.5
August	644	37	49	4.5
Sept.	585	36	54	4.5
Oct.	496	31	60	3.3
Nov.	501	32	62	3.3
Dec.	666	26	63	3.3
1951				
Jan.	733	21	72	3.3
Feb.	685	26	75	3.3
March	680	30	73	4.5
April	818	40	75	4.5
May	723	57	80	4.5
June	793	59	80	4.5
July	872	118	82	4.5
August	853	97	84	4.5
Sept.	934	164	85	4.5
Oct.	880	161	89	4.5
Nov.	885	174	92	4.5
Dec.	966	163	96	4.5
1952				
Jan.	1,020	187	98	4.5
Feb.	937	229	101	4.5
March	989	271	104	4.5
April	927	348	104	4.0
May	917	447	102	4.0
June	974	494	100	3.6
July	1,022	526	100	3.2
August	1,022	552	99	3.2
Sept.	1,076	541	99	2.6
Oct.	1,075	541	98	2.6
Nov.	1,184	525	97	2.15
Dec.	1,221	467	99	2.15

TABLE 1 (Continued)

Period	Net Money Supply (millions of NT dollars)	Preferential, Lottery and Time Deposits (millions of NT dollars)	Taipei Wholesale Prices 1952 = 100	Interest Rate on Three-Month Preferential Deposits at End of Month (percent per month)
1953				
March	1,359	499	103	2.15
June	1,356	640	108	2.15
Sept.	1,437	671	113	1.7
Dec.	1,575	599	115	1.3
1954				
March	1,592	667	114	1.3
June	1,779	747	110	1.3
Sept.	1,860	782	108	1.1
Dec.	2,016	765	112	1.1
1955				
March	2,196	816	121	1.1
June	2,363	883	122	1.1
Sept.	2,741	924	130	1.1
Dec.	2,573	860	144	1.1
1956				
March	2,616	832	140	1.0
June	2,682	747	141	1.0
Sept.	2,959	800	143	1.0
Dec.	3,124	848	152	1.0
1957				
March	3,261	970	154	1.0
June	3,402	1,060	153	1.0
Sept.	3,646	1,112	154	0.85
Dec.	3,762	1,161	154	0.85
1958				
March	3,875	1,331	155	0.85
June	3,918	1,404	154	0.85
Sept.	4,544	1,797	154	0.85
Dec.	5,129	2,114	163	0.85
1959				
				Discontinued
March	5,055	1,784	167	
June	5,169	1,786	168	
Sept.	5,160	1,398	177	
Dec.	5,570	1,339	181	

Sources: **Taiwan Financial Statistics Monthly,** Bank of Taiwan. Taipei, and various reports of the U.S. International Cooperation Administration, Taipei.

TABLE 2

Taiwan: Preferential Interest Rate Time Deposits

	One-month		Three-month		Six-month		One-year		Two-year		Total
	Million NT Dollars	Percent/ Month	Million NT Dollars	Percent/ Month	Million NT Dollars	Percent/ Month	Million NT Dollars	Percent/ Month	Million NT Dollars	Percent/ Month	Million NT Dollars
May 1952	266	3.8	62	4.0	16	4.2	—	—	—	—	437
Dec. 1952	261	2.0	95	2.15	101	2.3	—	—	—	—	457
Mar. 1953	288	2.0	88	2.15	115	2.3	—	—	—	—	492
June	368	2.0	101	2.15	137	2.3	23	3.0	—	—	628
Sept.	297	1.5	111	1.7	199	2.0	50	2.5	—	—	657
Dec.	204	1.2	90	1.3	228	1.5	63	2.0	—	—	585
Mar. 1954	230	1.2	92	1.3	258	1.5	72	2.0	—	—	652
June	261	1.2	102	1.3	286	1.5	80	2.0	—	—	730
Sept.	252	1.0	110	1.1	307	1.3	83	1.6	—	—	752
Dec.	235	1.0	95	1.1	321	1.3	83	1.6	—	—	734
Mar. 1955	234	1.0	98	1.1	364	1.3	86	1.6	—	—	783
June	238	1.0	116	1.1	403	1.3	79	1.6	—	—	835
Sept.	228	1.0	140	1.1	448	1.3	60	1.6	—	—	876
Dec.	204	1.0	119	1.1	423	1.3	58	1.6	—	—	804
Mar. 1956	145	0.85[1]	109	1.0[1]	412	1.3[1]	87	1.6[1]	—	—	753
June	105	0.85	126	1.0	261	1.5[2]	163	1.8[2]	—	—	655
Sept.	106	0.85	209	1.0	209	1.5	179	1.8	—	—	704
Dec.	112	0.85	221	1.0	185	1.5	190	1.8	—	—	709
Mar. 1957	112	0.85	243	1.0	209	1.5	229	1.8	—	—	793
June	112	0.85	239	1.0	258	1.5	250	1.8	—	—	860
Sept.	9	—	229	0.85	229	1.35	319	1.65	14	1.8[2]	801
Dec.	3	—	183	0.85	261	1.35	332	1.65	31	1.8	809
Mar. 1958	1	—	159	0.85	303	1.35	403	1.65	55	1.8	921
June	1	—	151	0.85	316	1.35	455	1.65	76	1.8	999
Sept.	0.5	—	162	0.85	416	1.35	611	1.65	81	1.8	1,271
Dec.	0.3	—	162	0.85	503	1.35	752	1.65	91	1.8	1,508
	Discontinued December 31, 1958										
Mar. 1959	0.2		30		277		544		—		850
June	0.1		9		17		414		—		441
Sept.	0.1		5		3		200		—		208
Dec.	0.1		4		1		13		—		18
Mar. 1960	0.1		3		0.4		3		—		7
June	0.1		3		0.3		2		—		4
Sept.	0.1		1		0.2		0.1		—		3
Dec.	—		1		0.2		0.1		—		1

[1] With loan feature.
[2] Without loan feature.

Source: **Taiwan Financial Statistics Monthly,** Bank of Taiwan, Taipei.

► LEONALL C. ANDERSEN and JULES M. LEVINE

A Test of Money Market Conditions As A Means of Short-Run Monetary Management

This article reports the results of a test of a currently held hypothesis regarding the means by which the Federal Reserve implements its short-run monetary management. The hypothesis tested is: "A change in money market conditions, usually expressed in terms of the degree of pressure in the money market, induced by Federal Reserve actions has a predictable effect on short-run changes in money, bank credit, and long-term interest rates." This hypothesis has been identified as the "money market condition theory of monetary management." [1]

The study briefly sets forth a current theory of the linkages between Federal Reserve monetary policy operations and the ultimate goals of policy, and it delineates the theory's role in Federal Reserve monetary management. It then discusses the relationship postulated to exist between measures of money market pressure and several intermediate guides of Federal Reserve policy. Next, the principal component method of factor analysis is used to construct variables summarizing money market pressure.

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[1] Leonall C. Andersen, "Money Market Conditions as a Guide for Monetary Management," a paper presented at the UCLA Conference on Targets and Indicators of Monetary Policy, April 28, 1966.

Finally, regression analysis is employed to test the hypothesis regarding the relationship between money market conditions and some frequently used intermediate guides of monetary policy. The period of analysis is from January 1960 to March 1965.

I. *Introduction*

A. Federal Reserve View of Monetary Management

The Federal Reserve, for purposes of monetary management, has classified the many economic variables it considers into four categories, often referred to as guides for monetary management. The first set (Federal Reserve's purchases and sales of U. S. Government securities, the discount rate, and reserve requirements) consists of variables manipulated by the Federal Reserve to change the cost and availability of reserves to member banks. The second set (referred to as money market guides) contains variables reflecting money market conditions, such as free reserves, member bank borrowing from Reserve banks, the basic reserve position of large money market banks, and the Treasury bill rate. The next set (referred to as intermediate guides) includes changes in money, bank credit, and long-term interest rates. The final set incorporates the ultimate goals of stabilization policy (employment, output, the general level of prices, and the balance-of-payments).

The flow of influence of Federal Reserve monetary actions, as reflected in the guides, on the ultimate goals of stabilization policy has been summarized by Keir:[2]

> Changes in the availability and cost of reserves are reflected immediately in money market conditions. Their influence spreads to bank credit and money, to interest rates in markets for longer-term debt, and to the entire range of spending financed by borrowed funds. In the end the ultimate targets of policy actions—total income and spending, total output and employment, the general level of prices, and international trade and capital flows—come to be influenced.

B. Use of the Guides in Practice

The policy directive of the Federal Open Market Committee (FOMC), which plays the central role in monetary management, has embodied much of the process discussed above.[3] Short-run monetary policy is set forth by the FOMC in its policy directive to the Manager of the System Open Market Account at the Federal Reserve Bank of New York. From 1960-1965, the directive stated the System's broad economic goals and gave its intermediate objectives for the following three weeks in terms of desired movements in member bank reserves, bank credit, money, and interest rates. Specific operating instructions by the FOMC to the Account Manager were given in qualitative terms with respect to a desired set of money market conditions.

II. *The Money Market Condition Theory of Monetary Management*

The money market condition theory of monetary management, as it has been used in the past, is not a fully developed theory.[4] Instead, it is a method of viewing *ex post* changes in individual money market time series as indications of changes in market pressure or conditions. In various Federal Reserve sources, however, brief explanations may be found regarding the reasons for associating a certain direction of change in pressure with a given change in the data; these

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[2] Peter M. Keir, "The Open Market Policy Process," *The Federal Reserve Bulletin*, October 1963, p. 1359.

[3] See the *Annual Report of the Board of Governors of the Federal Reserve System*, 1960-1965.

[4] This section is taken from Andersen, *op. cit.*

explanations usually are based on a partial equilibrium analysis.

This section presents the concept of money market pressure, discusses market variables commonly used by the Federal Reserve as indicators of pressure, and sets forth a theoretical relationship between money market pressure and changes in the intermediate guides of monetary policy. Currently held views from Federal Reserve sources are used rather than independently developed arguments.[5]

A. Concept of Money Market Pressure

The money market is the market for cash balances and close money substitutes in which banks, other financial institutions, and businesses trade to satisfy liquidity requirements.[6] The participants are on the demand or supply side of the market according to whether they desire to increase or decrease their cash balances. Equilibrium in the market is produced primarily by variations in bank credit extended to the participants and by member bank borrowing from Reserve banks and, to a lesser extent, by changes in short-term interest rates on various securities. The degree of pressure in the money market is denoted by the net adjustments the participants are under pressure to make in their liquidity positions and the cost of making them. Pressure in the money market is considered high when the demand for money market funds is greater than the supply at current interest rates, and equilibrium is produced by increased bank credit extended to participants, increased member bank borrowing from the Federal Reserve and higher interest rates.

B. Measures of Money Market Pressure

Eight measures of money market pressure are frequently used by the Federal Reserve. They are the Treasury bill rate, free reserves of all member banks, the basic reserve deficiency at eight New York money market banks, the basic reserve deficiency at 38 money market banks outside New York, member bank borrowing from the Federal Reserve, Government security dealer borrowings, the Federal funds rate, and the Federal Reserve discount rate.[7] The following discussion relates *ex post* movements in each of these variables to changes in money market pressure.[8]

A rise in the *Treasury bill rate* is taken to imply greater pressure in the money market, for if member banks have reserve deficiencies and other participants in the money market (such as nonbanking financial intermediaries, corporations, and local governments) require greater cash balances, Treasury bills can be sold to obtain funds, driving the bill rate up. When these participants in the money market have excess cash balances, surplus funds can be placed in Treasury bills, causing a decline in the bill rate, an indication of less market pressure.[9]

Pressure on the banking system is considered to be reduced when *free reserves* increase, since it indicates that banks have

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[5] The authors are indebted to Paul Meek of the Federal Reserve Bank of New York and to Professor Allan Meltzer for many helpful suggestions. However, this interpretation of the money market condition theory of monetary management from the sources cited is the sole responsibility of the authors.

[6] Robert V. Roosa, *Federal Reserve Operations in the Money and Securities Markets*, Federal Reserve Bank of New York, 1956, pp. 11-12.

[7] For added discussion of these measures of money market pressure, see Robert R. Wyand II, "Money Market Conditions–What Are They?," *Monthly Review*, Federal Reserve Bank of Atlanta, September 1965, pp. 1-4.

[8] These measures are not strictly independent, but the discussion presented in this section uses partial equilibrium analysis in conformity with the usual treatment of these variables in the literature cited.

[9] *The Federal Reserve System, Purposes and Functions*, Board of Governors, Washington, D. C., 1963, p. 114.

less borrowings and more idle funds available for credit expansion if they so desire. When free reserves decline, banks have less funds potentially available for credit expansion, and money market pressure is considered to have risen. Because of the volatility of factors affecting bank reserve positions, a shift in free reserves for a single week means little, but a continuing trend in free reserves implies that more or less pressure is being effected.[10]

The *basic reserve deficiencies* of the eight New York money market banks and the 38 money market banks outside of New York are computed by subtracting their net purchases of Federal funds from their free reserves. In effect, this measure shows the aggregate reserve deficiency of these banks before they take actions adjusting their borrowings from the Federal Reserve or engaging in Federal funds transactions. The higher the basic reserve deficiency of large money market banks, the greater the pressure existing in the money market. "A bank that covers part of its reserve needs with large temporary borrowings, in the Federal funds market or elsewhere, is in a less comfortable position than if it held the same quantity of reserve balances with smaller borrowings." [11]

Member bank borrowings from the Federal Reserve is considered an important indicator of money market pressure independent of its being a component of free reserves. This is based on the view that "under normal conditions these banks manage their affairs so that they do not need to resort to Reserve bank borrowing except for necessary contingencies. And once in debt, they seek to repay such debt promptly." [12] Tightness in the availability of bank credit and high interest rates has generally been associated with a large volume of borrowings, whereas ready credit availability and low interest rates have usually been associated with a small volume of borrowings. A high level of borrowing indicates a greater degree of pressure than a low level.

Dealers in U. S. Government securities borrow from banks, other financial intermediaries, nonfinancial corporations, and the public to carry their inventories. An increase in dealer borrowings and/or rising interest rate cost of their borrowing denotes greater pressure in the money market.[13] Moreover, increases in dealer inventories and borrowings above normal levels may portend higher interest rates in the future; dealers will be forced to sell off a portion of their inventories at reduced prices, creating added money market pressure.

The *Federal funds rate* is the interest rate charged on the immediate transfer of funds at the Federal Reserve banks, usually for one day. "The volume and distribution of these funds, and the rates of interest being paid on them, have assumed an increasing importance among the indicators of current money market conditions." [14] Changes in this rate are interpreted accordingly: "A rising Federal funds rate usually indicates an increasing demand for Federal funds loans or a falling supply," hence, an indication of greater pressure in the money market.[15] As banks have more daily funds available or smaller temporary deficiencies to cover, the rate falls, indicating less pressure.

An increase in the *Federal Reserve discount rate* raises the cost to member banks of removing reserve deficiencies by borrowing from the Federal Reserve.

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[10] *Ibid.*, pp. 223-224.

[11] "New Series on Federal Funds," *The Federal Reserve Bulletin*, August 1964.

[12] *Purposes and Functions, op. cit.*, p. 44.

[13] For a discussion of the impact of dealer financing on the money market, see, Louise Freeman, "The Financing of Government Security Dealers," *Monthly Review*, Federal Reserve Bank of New York, June 1964, pp. 115-116.

[14] "New Series on Federal Funds," *op. cit.*, p. 944.

[15] Wyand, *op. cit.*, p. 2.

Furthermore, money market interest rates (rates on short-term securities) usually accompany an increase in the discount rate, thereby increasing the cost to member banks of adjusting for reserve deficiencies by selling short-term securities. A rise in the discount rate, therefore, is considered to indicate greater pressure, while a decrease in the rate indicates less pressure.

C. Money Market Pressure and Intermediate Guides

The theoretical relationship between money market pressure and changes in the intermediate guides has not been set forth in detail in System sources. However, there is reflected in the 1959-1960 minutes of the FOMC, for example, a strong presumption that such a relationship exists. This section sketches briefly some reasons for this presumed relationship.

According to the money market condition theory of monetary management, increased pressure in the money market, other factors remaining unchanged, indicates a set of events which tends to reduce the rate of growth of money and bank credit and to increase long-term interest rates. An increase in money market pressure is said to have occurred when, as explained above, short-term interest rates rise, free reserves decline, and borrowings, reserve deficiencies, the Federal funds rate, and the discount rate increase.

These events denote a reduction in the rate of expansion of bank reserves available for deposit and credit expansion, a demand for liquidity by nonbank financial institutions and business firms greater than the prevailing supply at current interest rates, and higher costs to these money market participants of adjusting for reserve and liquidity deficiencies. As a result, bankers tend to be more restrained in making new loans and investments; consequently, expansion of bank deposits and credit is restricted. Upward pressure on long-term interest rates is produced by a combination of the following events: (1) arbitrage operations stemming from the rise in short-term rates; (2) higher costs to security dealers of financing inventories, resulting in lower bond prices as inventories are reduced; and (3) a reduced supply of funds from banks and other financial institutions to the long-term securities market as they build up their liquidity positions to desired levels. Decreased pressure in the money market produces opposite effects.

III. *Measuring Money Market Pressure*

Investigation of the relationship between money market pressure and the Federal Reserve's intermediate goals necessitates computing a summary measure for market pressure. There are many individual money market guides and they often move in a contradictory manner. Moreover, none has been demonstrated as being the most reliable indicator of pressure. It is desirable, therefore, to construct an index from the individual variables that shows the general movement of money market pressure.[16] This section describes factor analysis as a

[16] Some recent studies have related a frequently used proxy for money market conditions –free reserves–to movements in money, bank credit, and interest rates. See: Karl Brunner and Allan H. Meltzer, "The Federal Reserve's Attachment to the Free Reserve Concept," a Staff Analysis, Subcommittee on Domestic Finance, Committee on Banking and Currency, House of Representatives, 88th Congress, 2nd Session, May 7, 1964, pp. 56-63. A. James Meigs, *Free Reserves and the Money Supply*, The University of Chicago Press, 1962. Richard G. Davis, "Open Market Operations, Interest Rates, and Deposit Growth," *Quarterly Journal of Economics*, August 1965, pp. 431-454.

While it is possible to relate individual measures of market pressure to each intermediate guide, a summary index of pressure, such as developed in this article, would be preferable because in practice several series are observed by both the Account Manager and the FOMC in reaching a judgment regarding movements in market conditions.

means of summarizing a set of variables, presents the results of factor analysis applied to seven money market variables, and relates movements in summary measures of market pressure in the period 1960-1964 to FOMC directives.

A. Factor Analysis

The mathematical technique used in this study to construct an index of money market pressure is factor analysis. Factor analysis produces hypothetical variables, called factors, that explain the combined variance of a set of observed variables–in this case, the set of money market variables.

The important characteristic of factor analysis for this study is that weights are developed from the set of money market data which can be used to construct summary measures of money market pressure. In addition, the factors generated can be ordered in terms of the combined variance of the observed variables each factor explains, and the weights assigned to each variable as it enters into each factor can be used to assign a tentative interpretation to a factor.[17]

B. Factor Analysis of Money Market Variables

Table 1 presents the results of factor analysis of seven measures of money market pressure. Since the Federal funds rate is primarily used as a measure of pressure during extremely short periods, it is not included. Data were taken from the period January 1960 to March 1965. Monthly averages of daily figures (not seasonally adjusted) for each variable

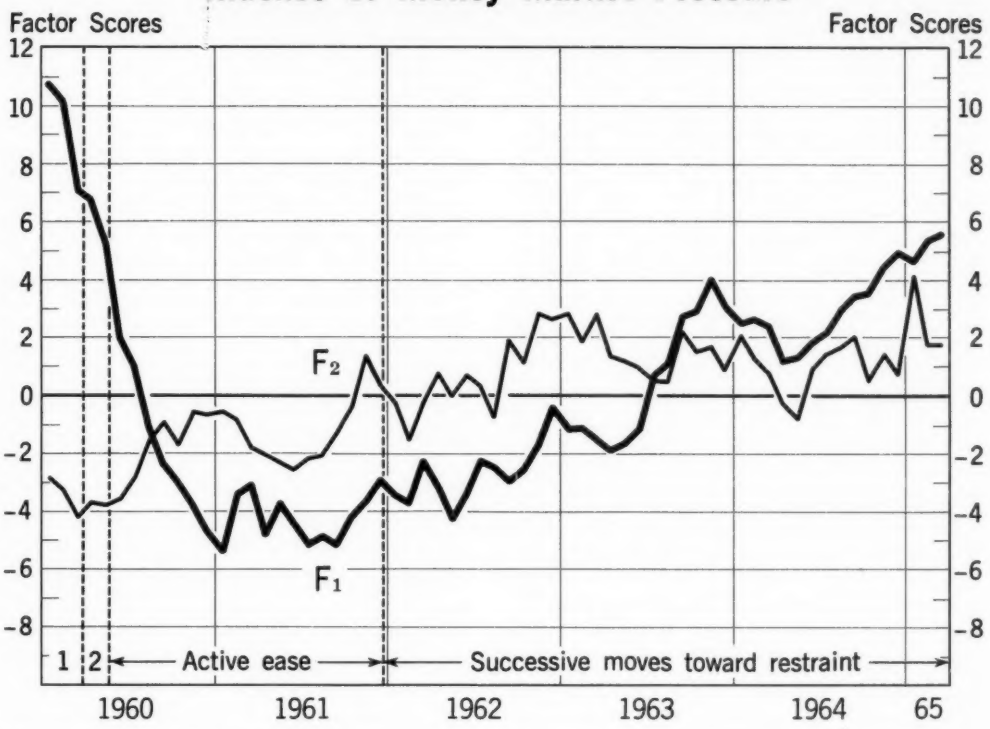
[17] For an explanation of factor analysis and the principal factor method, see H. H. Harman, *Modern Factor Analysis*, University of Chicago Press, 1960, Chapters 2 and 9. Principal component analysis was used, but no factor rotation was performed.

TABLE 1

Principal Component Analysis of Money Market Guides

	F_1	F_2	F_3	F_4	F_5	F_6	F_7
Treasury Bill Rate	.88376	.31964	.17787	.08328	—.16462	—.22252	—.04022
Free Reserves	—.95666	.05309	—.14747	—.03454	—.19656	.02743	—.14019
Basic Reserve Deficiency 8 New York Money Market Banks	.01056	.90511	.25241	—.33175	—.03410	.07444	.01382
Basic Reserve Deficiency 38 Other Money Market Banks	.71026	.29015	—.62578	—.13124	—.04449	—.01082	.02063
Member Bank Borrowing from Reserve Banks	.92760	—.23969	.05270	—.12221	.21505	.03927	—.12888
Government Securities Dealer Borrowing	—.12838	.91911	—.07926	.32887	.14661	.04289	—.03136
Federal Reserve Discount Rate	.93067	—.11496	.09076	.15651	—.20550	.21370	.00232
Eigenvalues	3.94387	1.92384	.52599	.28299	.17885	.10497	.03949
Cummulative Proportion of Total Variance	.56341	.83824	.91339	.95381	.97936	.99436	1.00000

Indexes of Money Market Pressure



[1] Policy of restraint carried over from late 1959.
[2] Move to ease.

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Federal Reserve Bank of St. Louis

were used. Unadjusted data were used to reflect the common practice of using such data in analyzing money market conditions by both the Federal Reserve and the financial community.

Each column in Table 1 represents a factor, and the first seven entries in each column constitute a scaled eigenvector (composed of factor loadings). The eighth entry is the eigenvalue related to each factor. The bottom row is the cummulative percent of the total variance of the set of variables accounted for by the i^{th} number of factors.

Since seven variables are used as measures of market pressure, seven factors are developed. It is desirable, however, to limit the number of factors included in a study to those that are significant. Kaiser suggests that the number of factors judged significant be limited to those factors whose eigenvalues are greater than unity.[18] Using this criterion, only the first two factors are relevant (Table 1). These two factors together account for 84 percent of the total variance of the seven money market variables; each of the remaining factors contribute little to the over-all variance.

It is possible, tentatively, to assign an interpretation to the first two factors. The factor loadings are the simple correlation coefficients of the money market variables and the factors; therefore, the factor loadings recorded in Table 1 indicate which factors are most highly related to subsets of the observed variables. The first factor (F_1) has high factor loadings

[18] See W. W. Cooley and P. R. Lohnes, *Multivariate Procedures For The Behavioral Sciences*, Wiley, N. Y., 1962, p. 162.

for market variables which are generally national in scope: the Treasury bill rate, free reserves, the basic reserve deficiency of 38 money market banks outside New York, member bank borrowing from Reserve Banks, and the Federal Reserve discount rate. The second factor (F_2) is related primarily to two New York money market variables: the basic reserve deficiency of eight New York money market banks and Government security dealer borrowings. Thus, a tentative identification is made that F_1 represents "nation-wide" money market pressure and that F_2 represents "New York" market pressure.

The signs of the factor loadings which are dominant in F_1 and in F_2 (Table 1) are consistent with the theory previously outlined. These signs indicate that measured money market pressure is positively related to the Treasury bill rate, the basic reserve deficiency of large money market banks, member bank borrowing from Reserve banks, Government security dealer borrowings, and the discount rate, and that measured pressure is negatively related to free reserves. It is, therefore, concluded that both F_1 and F_2 summarize money market pressure in the expected manner.

C. Indexes of Money Market Pressure as Measures of Federal Reserve Policy

A time series for each of the two significant factors was developed by generating a factor score (F_i) for each month. This score for a month was calculated by summing the product of the factor loadings (F_{ij}) from Table 1 times normalized values (U_j) of observations of each money market variable (X_j) for the month.

$$F_i = \sum_j F_{ij}U_j; \text{ where}$$

F_i = factor score for i^{th} factor

F_{ij} = factor loading for the j^{th} variable in the i^{th} factor

$$U_j = \frac{X_j - \overline{X}_j}{\sigma_{X_j}}$$

$i = 1, 2$

$j = 1, 2, \ldots 7$

Using the above formula, time series of monthly observations from January 1960 to March 1965 were developed for F_1 and F_2, and these two series are presented in the Chart. In this Chart, a high factor score represents high money market pressure, and the converse for low factor scores. The performance of the two time series are next compared with policy instructions of the FOMC.

An examination of the FOMC reports from 1960-1964 indicates that in almost every instance instructions to the New York trading desk for the implementation of short-term monetary policy were given in terms of a set of money market conditions. These conditions, in turn, were expected to produce desired changes in money, bank credit, member bank reserves, and interest rates. The dates and the direction of major policy changes are presented in the Chart.

At the beginning of 1960, a policy of "restraint" was carried over from 1959. This policy was maintained until March 1, when a move toward "less restraint" was initiated, and this move was subsequently made more obvious on April 12. The period from May 24, 1960 to December 19, 1961 might be characterized as a period of "active ease." Beginning on December 19, 1961 and to the end of 1964, successive instructions for "increased restraint" were adopted (June 19, 1962; May 7, 1963; July 30, 1963; August 18, 1964; and December 1, 1964).

The Chart indicates that "nation-wide" money market pressures, as measured by F_1, reasonably approximated FOMC policy instructions. The index fell from early 1960 to early 1961 and remained at a low level to late 1961, closely following instructions for the implementation of "easier" money market conditions. Sub-

sequent to late 1961, F_1 generally moved upward as instructions for "increasing restraint" were conveyed to the trading desk.

The index F_2, consisting primarily of New York money market variables, did not follow FOMC instructions as well as did F_1. According to F_2, increasing pressure was indicated from early 1960 to late 1961, a period when instructions were for "ease." During the next 12 months, a period of "increasing restraint," F_2 generally rose, as might be expected from policy instructions. However, from late 1962 to the end of the period under examination, F_2 fluctuated around the level reached in late 1962; instructions during these months were for "added restraint."

IV. *Regressions of Intermediate Guides on Money Market Indexes*

As a test of the general hypothesis set forth at the beginning of this article, regressions were run of several intermediate guides of the Federal Reserve on the two indexes of money market pressure (F_1 and F_2).[19] The intermediate guides used were those most frequently mentioned in the 1960-1964 policy directives: money, bank credit, total reserves, and long-term interest rates. For this study, two definitions of money were used, narrowly defined as demand deposits adjusted plus currency held by the nonbank public, and broadly defined to include time deposits at commercial banks. Since the money market pressure concept has been used primarly as a tool of short-run monetary management, month-to-month rates of change (seasonally adjusted) in money, bank credit, and total reserves were used along with the monthly average of the corporate Aaa bond rate (not seasonally adjusted). As in the case of money market variables, the choice between unadjusted and seasonally adjusted data was made so as to conform to common usage in analyzing these guides.

According to the theory presented of the relationship between money market pressure and changes in the intermediate guides, the regression coefficients of both F_1 and F_2 should be negative with regard to rates of change in money, total reserves, bank credit, and money plus time deposits. The coefficients relating the long-term interest rate to F_1 and F_2 should be positive. If, as postulated, money market pressure is a major determinant of movements in the intermediate guides, not only should the regression coefficients have the correct signs, but F_1 and F_2 should explain a significant part of the variance of each guide. Table 2

TABLE 2

Regression Analysis of Intermediate Guides on Indexes of Money Market Pressure[1]

Intermediate Guide	Indexes of Market Pressure F_1	F_2	R^2
Money (narrowly defined)	—.135	.807	
	(.088)	(.181)	
	.028	.242	.270
Member Bank	—.139*	.710*	
Total Reserves	(.194)	(.396)	
	.008	.050	.058*
Bank Credit	—.217	.852	
	(.102)	(.209)	
	.055	.204	.259
Money plus	—.269	1.158	
Time Deposits	(.083)	(.170)	
	.090	.396	.486
Long-Term Interest	.012	—.017	
Rates	(.002)	(.005)	
	.289	.135	.424

[1] The first number in each regression is the regression coefficient, the second is the standard error of the coefficient, and the third is the contribution of each index to R^2.

* Not significant at the 5 percent level.

[19] For a detailed discussion of this use of factor indexes in regressions, see, W. F. Massy, "Principal Components Regression in Exploratory Statistical Research," *Journal of the American Statistical Association*, March 1965, pp. 234-256.

lists the regression coefficients for each of the intermediate guides on the two indexes of money market pressure along with the associated coefficients of determination (R^2).

In no case do the money market indexes together explain more than half of the variation in any of the intermediate guides. F_1 and F_2 account for 49 percent of the variation in money plus time deposits, and 42 percent of the variation in the corporate Aaa rate. The indexes explain 26 percent of the variation in bank credit, and 27 percent of the variation in money. The contribution of F_1 and F_2 to the variation in total reserves is not statistically significant.

More interesting are the signs of the regression coefficients of the two money market indexes and the contribution of each index to the explained variation of each intermediate guide. The coefficient for F_1, the index of "nation-wide" pressure, in the regression concerning the rate of change of money has a negative sign (a sign that conforms to the theory of how money market pressure affects this intermediate guide). But F_1 accounts for only 3 percent of the variation in the money supply while F_2, the index "New York" money market conditions, accounts for 24 percent of the variation in money. The regression coefficient of F_2 is positive; in general, F_2 and money move in the same direction, which is contrary to the theory.

Rates of change of total reserves do not appear to be related to the indexes of money market pressure. Neither of the regression coefficients are statistically significant.

The regression coefficients of F_1 for the equation that relates this index to rates of change of bank credit has the correct (minus) sign, but F_1 accounts for only 6 percent of the variation in bank credit. The "New York" money market index accounts for 20 percent of the variation, but its regression coefficient is positive, again contrary to the theory.

The results for rates of change of money plus time deposits regressed on F_1 and F_2 are similar to those for the regressions reported above. The nation-wide money market index explains a smaller amount of the variation in this particular intermediate guide (9 percent) than the "New York" index (40 percent). The regression coefficient for F_1 has the correct sign while the coefficient for F_2 has an incorrect sign.

The only regression where the index explaining most of the variation in a money market guide also has a regression coefficient with a sign that conforms to the theory relates the corporate Aaa bond rate to F_1 and F_2. F_1 accounts for 29 percent of the variation and its regression coefficient is positive, corresponding to the theoretical sign. F_2 explains about 14 percent of the variation but its regression coefficient has a negative sign, contrary to theory.

V. *Conclusions*

The results of the regression analysis lead to the rejection of the hypothesis tested. In no case did the two indexes of money market pressure explain more than half the variation in any intermediate guide; therefore, there are more important variables than market pressure contributing to the variation in the guides. Although all the regression coefficients for F_1 had signs consistent with the hypothesis, in only one case, the long-term interest rate, did this index of market pressure explain any appreciable part of the variance of an intermediate guide. In all the other cases, F_2 accounted for the major part of the explained variance; but this index of market pressure had signs in every regression inconsistent with the hypothesis.

The above conclusion is not biased by the fact that unadjusted data were used in developing the indexes of market pressure while seasonally adjusted data (except for long-term interest rates) were used for the intermediate guides in the

regressions. Regressions (not reported in this study) were run using unadjusted data for all variables, and the results indicated even less association between the two indexes of money market pressure and the intermediate guides than shown here.

There is additional evidence, in another study by the authors, that the use of periods longer than one month probably would also lead to the rejection of the hypothesis. A comparison over three FOMC policy periods during 1964 of movements in money market guides and movements in the intermediate guides led to the conclusion that:

> Many money market guides, on balance, moved in a direction consonant with changes in the FOMC's directives during 1964, although a few individual measures had only small net changes or actually moved in a contrary fashion.
>
> The movement in the intermediate objectives during 1964 showed little relation to the changes in the money market conditions, and these intermediate measures did not always move in a mutually consistent manner. The rates of change of money, bank credit, and reserves were all greater during the second policy period, when firmer conditions developed in the money market, than during the first period. In the first few months after the changes in market conditions in November, bank reserves and bank credit continued to grow rapidly—even accelerated. However, money moved up at a slower pace. Most interest rates showed little change during the year; an exception was the rise in short-term rates after November 23.[20]

It is possible that the set of variables used to measure money market pressure may have been incomplete. Changes in the pace of economic activity may change money market pressure without any action of the Federal Reserve. Also, changes in the level of unborrowed reserves of member banks may lead to a slight change in the set of money market variables used here, but may greatly change over-all pressure in the market. It is possible, consequently, that the lack of relationship found in this study between market pressure and the intermediate guides may result from the monetary authorities using *ex post* data for a narrow set of money market guides within a partial equilibrium framework to interpret pressure. This may lead to actions by the trading desk which might result in different movements in the intermediate guides from those expected.

[20] Leonall C. Andersen and Jules M. Levine, "Implementation of Federal Reserve Open Market Policy in 1964," *Review*, Federal Reserve Bank of St. Louis, June 1965, p. 8.

►J. A. GALBRAITH

Monetary Policy and Nonbank Financial Intermediaries

There are some who believe that the functioning of nonbank financial intermediaries and commercial banks have comparable effects on the economy and hence are of equal concern for monetary policy.[1] There is, however, a sharp division of opinion on the question whether nonbank financial intermediaries (hereafter described as near banks) expand or contract with the banking system.

Monetary policy may operate more effectively, if near banks move with rather than against the policy. However, there are some who argue that near banks are able to slip away from monetary policy, that is to expand when monetary policy contracts the banking system.[2]

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[1] Cf. the remarks of Irwin Friend in "The Effects of Monetary Policies on Nonmonetary Financial Institutions and Capital Markets," *Private Capital Markets*, pp. 8-9, 108-109, 120, for a contrary view. Prepared for the Commission on Money and Credit. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1964.

[2] Cf. the survey article by Harry G. Johnson, "Monetary Theory and Policy," *American Economic Review*, 52, June 1962, pp. 373-374. James Tobin and William C. Brainard, "Financial Intermediaries and the Effectiveness of Monetary Controls," *American Economic Review, Papers and Proceedings*, 53, May 1963, pp. 384, 386, are concerned with the effect of near banks on the "rate of return on ownership of real capital" and not with the manner in which these financial intermediaries move with monetary policy.

These differences of view, we propose to show, may be explained by the connection between monetary policy and the size of near banks.[3] For this purpose, we explore three aspects of policy: its direct effect on the cash base of near banks; its effect on the size of the market for the claims of near banks; and its effect on interest rates.

I. *Cash Base*

It is generally assumed that monetary policy does not directly affect the cash base of near banks as it does that of banks. This is most apparent with respect to the open-market operations of the monetary authorities. Since the purchases and sales of securities by the monetary authorities are generally carried out with security dealers, which are either customers of the banks or banks themselves, there is no direct effect on the outstanding claims of near banks, as there is on the deposits of commercial banks.

Of course, open-market sales will reduce near bank claims if purchasers of the securities, sold by the central bank, carry working balances with near banks which are drawn down in making payment to the central bank. Similarly, open-market purchases will expand near bank claims if sellers of the securities, bought by the central bank, deposit the proceeds directly with near banks.[4] Probably, however, any such direct effects of open-market operations on near bank claims are negligible, and would be so even if near banks carried their working cash balances with the central bank instead of with commercial banks.

If buyers of securities from the central bank finance their purchases with loans from near banks, the effect is simply to alter the composition of the assets of the near banks. Their liabilities remain constant. The near banks merely have less cash and more loans outstanding. And if sellers of securities to the central bank use the proceeds to pay off near bank loans, the effect is to increase near bank cash and reduce near bank loans. There is no direct effect on near bank liabilities. Therefore the direct effect of monetary policy on near banks may be assumed to be negligible.

II. *Market Size*

When monetary policy expands the banking system, the amount of bank deposits held by the public increases. This means that, if nothing else has changed, the total amount of financial intermediary claims outstanding—bank and nonbank—has been increased. If near banks maintain their share of the total market, they will expand as monetary policy expands the banking system, and they will contract as monetary policy contracts the banking system.

For this to be so, the amount of near bank claims held by the public (MP) must be a function of the amount of bank deposits held by the public (DP), such that

$$(1) \qquad MP = f(DP) = n(DP)$$

The behavioral relation (1) assumes an attempt by the public to keep a constant ratio (n) between holdings of near bank claims and bank deposits. This relationship is assumed by those who hold that near banks expand and contract with the banking system, and so are affected by monetary policy in the same way as banks. Thus, D. A. Alhadeff points out that monetary policy will affect the near bank sector in the same way as the banking system only if the public holds constant the ratio of bank deposits to near

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[3] Edward C. Ettin, "A Note on the Growth of Nonbank Financial Intermediaries and Interest Rate Determination," *Quarterly Journal of Economics*, 78, November 1964, pp. 649-652, endeavors to explain the debate in terms of the effect of near banks on interest rates.

[4] The Bank of Canada, *Evidence of the Governor before the Royal Commission on Banking and Finance*, Ottawa, May 1964, p. 125, paragraph 45, suggests that a seller of securities to the central bank might deposit the proceeds with a near bank.

bank liabilities.[5] The ratio can then be incorporated into multiplier analysis, in much the same way as the currency ratio is included in banking multipliers, to show that near banks expand when banks expand, and contract when banks contract.[6]

Those who use the ratio or multiplier approach to reach this conclusion usually assume, as a simple, fact that a stable relationship exists between bank deposits and near bank claims. Thus, D. Shelby holds that the public will, in fact, divide its holdings of claims on financial institutions in some given ratio between banks and near banks.[7] *The Report of the Royal Commission on Banking and Finance* speaks of near banks obtaining a given share of the public's total business with financial institutions, with the public's preference for different types of financial assets being one of the determinants of the share obtained.[8] The Bank of Canada argues that when the banking system is expanding "there is no reason to suppose that the public could be induced to add to its holdings of chartered bank deposits without adding to its holdings of these other types of liquid assets (near banks liabilities) as well."[9]

Irwin Friend works with a more unusual relationship in which the public demands a fixed total of deposits supplied by banks and near banks.[10] Monetary policy that reduces the amount of bank deposits causes the public to acquire additional deposits from near banks in order to keep constant total deposits held by the public. However, additional funds are required for a contracting banking system to pay off loans and to buy the securities being sold by the banking system. Therefore, the total amount of deposits desired by the public should fall with a banking contraction.

If no relationship exists between bank deposits and near bank claims, however, changes in the size of the banking system as such have no effect on near banks. Even if a relationship exists, it may be a lagged one and may depend more on income effects than on an "asset" or balance-sheet effect. Near bank claims may move with bank deposits because changes in bank deposits alter total expenditures, incomes, and savings, which in turn affect the holdings of near bank claims. W. L. Smith argues that this is the connection, and that, as a result, the time period of an expansion or contraction for near banks is entirely different from that of the banking system.[11] For this reason, he doubts whether a "credit expansion approach" to near banks is "desirable or useful." Assar Lindbeck points out that if changes in the public's holdings of near bank claims are related to changes in savings, a change in the size of the banking system

[5] "Credit Controls and Financial Intermediaries," *American Economic Review*, 50, September 1960, p. 661.

[6] Cf. D. Shelby, "Some Implications of the Growth of Financial Intermediaries," *Journal of Finance*, 13, December 1958, pp. 529-532; also compare Assar Lindbeck, *A Study in Monetary Analysis*, Stockholm, 1963, pp. 188-198, D. I. Fand, "Intermediary Claims and the Adequacy of Our Monetary Controls," *Banking and Monetary Studies*, Deane Carson ed., Homewood, Illinois, 1963, pp. 241-242, and, W. P. Yohe, "The Derivation of Certain Financial Multipliers," *Southern Economic Journal*, 29, July 1962, pp. 26, 28-29.

[7] *Op.cit.*, pp. 524, 533-534.

[8] Ottawa: Queen's Printer, 1964, pp. 93-102, 111-112. A simplified interpretation of the Commission's approach is given by J. A. Galbraith in, "Near Banks and Monetary Policy: Views of the Royal Commission on Banking and Finance," *The Canadian Banker*, 71, Autumn 1964, pp. 23-31.

[9] *Evidence of the Governor before the Royal Commission on Banking and Finance*, p. 125, paragraph 41.

[10] "The Effects of Monetary Policies on Nonmonetary Financial Institutions and Capital Markets," pp. 8-9.

[11] "Financial Intermediaries and Monetary Controls," *Quarterly Journal of Economics*, 73, November 1959, pp. 536-538.

that does not alter savings will not affect the size of the near bank sector.[12] D. I. Fand categorically states that "in the short run the public's preference for increments of intermediary claims may be close to zero."[13]

Furthermore, to the extent that near bank claims are not redeemable on demand, or transferable, the public will be able to withdraw funds from near banks in response to a contraction in bank deposits only as their near bank liabilities mature. It is possible that no change can occur in near bank claims outstanding during the period that bank deposits are being contracted.

In the absence of a definitive empirical testing of the hypothesis, one can only conclude at present that near banks will expand and contract as a direct result of a corresponding expansion and contraction of the banking system if the public attempts to maintain a given ratio between holdings of bank deposits and of near bank claims, given constant relative interest rates. For policy purposes, as pointed out in part V, it is immaterial whether such a relationship exists.

III. *Interest Rates*

Monetary policy, in addition to altering the size of the banking system, may also change interest rates. A contractionary monetary policy is likely to raise interest rates. In the absence of rigidities, rates paid by borrowers, as well as those received by lenders, will rise. This will include the rates paid and received by banks and near banks. If bank and near bank rates are not equally flexible, the relative change in rates may induce the public to shift funds between banks and near banks.

This will be the case if the amount of near bank claims held by the public (MP) is a function of the difference between the rate of return on near bank claims (i_n) and the over-all rate of return on bank deposits (i_b). Thus,

$$(2) \qquad MP = f(i_n - i_b)$$

with the property $\partial MP/\partial f(i_n - i_b) > 0$

The rate of return paid on bank deposits can be considered an over-all net rate of return on all deposits, which takes into account the fact that demand deposits may yield no explicit rate of interest and that service charges and similar fees levied for the maintenance of deposit accounts reduce the over-all rate of return. Banks, therefore, by adjusting not only the rate paid on interest-bearing deposits, but also service charges and compensating balance requirements (in banking systems having these requirements) can alter the over-all rate of return yielded by bank deposits.[14]

For convenience, it is assumed that $i_n > i_b$, so that an increase in $(i_n - i_b)$ represents a widening of the prevailing differential between the two rates of return. This widening makes near bank claims more attractive relative to bank deposits, causing the public to demand more near bank claims in accordance with relation (2). On the contrary, a reduction in $(i_n - i_b)$, representing a narrowing of the differential between the two rates, which makes near bank claims less attractive relative to bank deposits, may cause the public to reduce its demand for near bank claims. However, the shift from banks to near banks may be nonreversible. While the public may shift from banks to near banks when the differential in rates widens, they may not, however, shift back when the differential narrows—people once becoming customers of near banks may continue to remain customers even after the additional rate differential that initially attracted them to near banks disappears.

[12] *Op.cit.*, p. 198.

[13] *Op.cit.*, p. 239.

[14] Cf. A. D. Alhadeff, "Credit Controls and Financial Intermediaries," pp. 662-665.

Matching changes in i_n and i_b that leave $(i_n - i_b)$ constant should have no effect on the public's demand for near bank claims. However, if the public thinks in real terms, a rise in the absolute level of interest rates, even with a constant differential between bank and near bank rates, would change the public's holdings of near bank claims if these claims were not fixed (nominal) price claims as are most bank deposits. Even if all intermediary claims were fixed-price, which most are, an absolute change in interest rates, by producing a wealth effect, might cause the public to change its holdings of near bank claims despite a constant differential in rates between bank and near bank claims. Such an effect, however, is unlikely to be large. When it exists, it means that bank rates must be more flexible than near bank rates —the differential between the two must narrow—in order to prevent funds from shifting to near banks when interest rates rise.

It follows that if the relationship in (2) exists, there could be an interest rate effect on near banks associated with monetary policy. And the rate effect could cause near banks to move perversely with the movement of the banking system. A perverse movement would result if near bank interest rates were more flexible than bank rates. If near bank rates were less flexible than bank rates, the rate effect of monetary policy would cause near banks to move with, not against, monetary policy. However, the rate of return on bank deposits is likely to be less flexible than that on near bank claims, because of special restrictions usually imposed on banks. The restrictions may be indirect, as in Canada, where, at present, a 6 percent effective maximum on most bank lending rates limits the extent to which interest rates on bank deposits can be raised. In the United States, of course, the legal restraint on deposit rates is direct.

If bank rates were denied as much upward flexibility as near bank rates, in a tight money situation with the banking system contracting and interest rates rising, near bank rates would rise more than bank rates. The widening of the rate differential between near banks and banks would favor a shift of funds to the near banks, which would enable near banks to expand when the banking system was contracting. This represents a slippage from monetary control.

In a deposit expansion, however, rate rigidities will not result in any offset to monetary policy if the public shifts to near banks only when the rate differential widens but does not shift again when it narrows. In that case, near bank claims move to offset monetary policy when bank deposits are contracted, but remain neutral when bank deposits are expanded. Monetary policy then favors a growth of near banks during a period of tight money, growth that is not lost during a period of easy money.

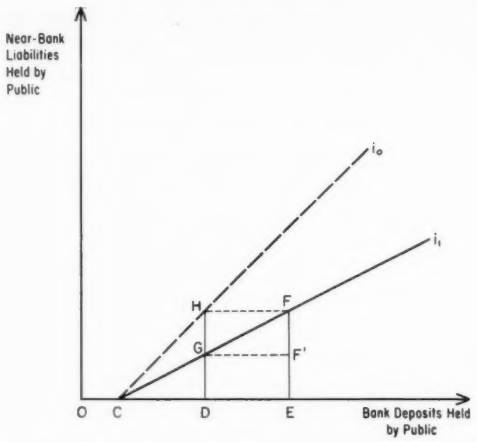
If a category of near bank suffers from a rate rigidity not shared by other types of near banks, that near bank category will find funds flowing from it during periods of tight money, and to it in times of easy money. Its claims will then be found to be moving in the same direction as monetary policy. Thus, J. R. Vernon found that U. S. savings and loan associations were responsive to monetary policy because the rates they paid for funds were relatively less flexible than the rates paid by competing users of funds.[15] The lack of flexibility in this case may partly result from elastic demand for mortgage loans. If, as interest rates rise, the demand for particular types of loans falls, then any category of near bank specializing in these types of loans will be unable to pass on to borrowers higher rates paid for funds. Such near

[15] "Savings and Loan Association Response to Monetary Policies, 1953-61: A Case Study on 'Availability'," *Southern Economic Journal*, 31, January 1965, pp. 229, 232, 234, 237.

banks will then be adversely affected by a restrictive monetary policy. Near banks locked into long-term loans acquired at lower interest rates in easier money periods will also be unable to recoup higher borrowing rates by upward adjustments in their lending rates. This seems to be the situation facing U. S. savings and loan associations today.[16]

Many writers assume that near bank rates are more flexible than bank rates and so derive an interest-rate effect. Their analysis runs in terms of interest-induced shifts of funds between banks and near banks, which is seen as offsetting monetary policy.[17] This approach is often implicit in the discussion of the effect of near banks on monetary policy that runs in terms of the demand for money being shifted, and its interest elasticity altered, as a result of interest-induced shifts of funds from banks to other intermediaries.[18] If the demand for money becomes more elastic as near banks grow, a given amount of open-market operations will have less effect on interest rates than otherwise.[19] Thus, by concentrating on the interest-rate effect alone, and assuming, often explicitly, an interest rate rigidity for banks, these writers arrive at the conclusion that near banks offset monetary policy.

Near Bank Function



IV. *Reconciliation*

We have seen that those who analyze the problem in terms of market size easily conclude that near banks are affected by monetary policy in the same direction as banks. Those who concentrate on interest rates reach the opposite conclusion. A reconciliation is simply a matter of combining both effects, which may exist side by side.

A combination of the two effects can be illustrated by a diagram showing the relationship between the public's holdings of near bank claims and bank deposits. In this Figure, the relationship between the two is depicted by the line ci_1, which may be called the near bank function. Bank deposits are measured along the horizontal axis and near bank claims along the vertical axis, both in dollar amounts. The function ci_1, is drawn

[16] Cf. John Davenport, "The Strain Is on the Banks," *Fortune*, July 1, 1966, p. 168.

[17] Those who adopt this approach include R. S. Thorn, "Nonbank Financial Intermediaries, Credit Expansion, and Monetary Policy," *International Monetary Fund Staff Papers*, 6, November 1958, pp. 376-377, 380; Assar Lindbeck, *op.cit.*, pp. 228-229; D. I. Fand, *op.cit.*, pp. 244-249; W. L. Smith, "Financial Intermediaries and Monetary Controls," pp. 539-540; *idem*, "Reserve Requirements in the American Monetary System," *Monetary Management*, pp. 309-312, prepared for the Commission on Money and Credit, Englewood Cliffs, N.J.: Prentice-Hall Inc., 1963; *Money and Credit: Their Influence on Jobs, Prices, and Growth*, p. 78. Report of the Commission on Money and Credit, Englewood Cliffs, N.J.: Prentice-Hall Inc., 1961.

[18] This is one of the arguments found in J. G. Gurley and E. S. Shaw, *Money in a Theory of Finance*, Washington, D.C., 1960, pp. 207-208, 216-218, 239-241. Also cf. the interpretation of Gurley and Shaw in the review article by Don Patinkin, "Financial Intermediaries and the Logical Structure of Monetary Theory," *American Economic Review*, 51, March 1961, p. 110.

[19] J. G. Gurley and E. S. Shaw, *loc.cit.*, and Don Patinkin, *loc.cit.*, imply near banks impart greater elasticity to the demand for money; A. L. Marty in "Gurley and Shaw on

for a given differential between the rates of return on near bank claims and bank deposits. It is also based on the simplifying assumptions that the marginal currency ratio of the public is zero and has a zero interest elasticity, and that the marginal cash ratio of all near banks is zero and remains constant. From the Figure, it is apparent that as open-market operations expand bank deposits, near bank claims held by the public rise. And as open-market operations contract bank deposits, near bank claims fall. This is on the assumption that the interest differential between the two rates of return remains unchanged as bank deposits expand and contract.

A widening of the differential, however, shifts the function ci_1, upward to a new position. Thus, if in the Figure a contraction in bank deposits from E to D is accompanied by a shift of ci_1 to ci_0, because of relative rate movements, near bank claims will not fall but will remain equal to EF, which equals DH. And if the rate movement is such as to shift ci_1 beyond ci_0, near bank claims will actually rise as bank deposits fall by DE. The opposite conclusions result for a narrowing of the rate differential between banks and near banks which causes the near bank function to shift downward. The function will not shift downward if new customers attracted by near banks, as a result of a widening in the normal differential between banks and near banks, do not shift back to the banks again when the differential is restored to its normal level. And, of course, if near bank rates are less flexible than bank rates, the function will fall as the banking system is contracted, causing near bank claims to decline with bank deposits.

If no relationship exists between the public's holdings of near bank claims and bank deposits, such that the public does not attempt to maintain a constant ratio between the two, the situation could be represented in the Figure by a straight line parallel to the horizontal axis. This line would intercept the vertical axis at the point representing the amount of near bank claims the public chooses to hold. *Ceteris paribus,* changes in deposits would not result in the public trying to alter the amount of near bank claims held. The line would shift up and down, however, as the rate differential between deposits and near bank claims widened or narrowed.

If there is no interest-rate rigidity, so that bank deposit rates and rates on near bank claims are both equally flexible, there is no interest-induced shift of the near bank function, so that near bank claims either expand and contract with bank deposits or remain constant. If the former is true, monetary policy is reinforced; if the latter occurs, it is because the public does not try to shift between bank deposits and near bank claims when the amount of deposits is changing. In that case, there is no interference with the effectiveness of monetary policy.

Of course, if near bank claims can be made to expand and contract along with the banking system, it would spread the direct influence of monetary policy more widely. This, however, would not necessarily make monetary policy more effective. It would take additional administrative controls (and effort) to get a near bank reaction from monetary policy, and there would be no net gain for monetary policy if all objectives were previously being obtained simply through the banking system.[20]

Money in a Theory of Finance," *Journal of Political Economy,* 69, February 1961, pp. 59-60, and Assar Lindbeck in *op. cit.,* p. 184, hold that near banks might make the elasticity less. Harry G. Johnson, *op. cit.,* p. 373, states that the central issue for monetary policy of "financial development" is whether near banks "substantially increase the interest-elasticity of demand for money."

[20] Assar Lindbeck, *op.cit.,* pp. 208, 289, appears to take the opposite view. He sees the

V. *Policy Implications*

In the debate on near banks and monetary policy, policy recommendations have been as varied as the analyses of how monetary policy affects near banks. Participants to the debate, despite the absence of hard facts, have not been slow to draw policy recommendations from their analyses. Those who concentrate on the interest-rate effect have favored the prevention of interest-induced shifts of funds to near banks during periods of tight money, through direct controls such as reserve requirements on near banks and ceilings on their interest rates.[21] Some, such as W. L. Smith, who see no evidence of "systematic destabilizing shifts" of funds between banks and near banks, only venture to say that "if such shifts should raise difficulties in the future, their destabilizing effects can be eliminated" by applying direct controls to near banks.[22] And, of course, those who concentrate on the market-share effect are equally quick to dismiss the need for imposing monetary policy forms of control on near banks.

This analysis suggests that, from the policy point of view, it is immaterial whether a constant ratio exists between the public's holdings of bank deposits and near bank claims. If such a ratio exists, it helps monetary policy; but if it does not exist, monetary policy is not directly harmed. Less flexible rates of return on bank deposits than on near bank claims, however, may create difficulties for monetary policy. The monetary authorities should take care, in imposing any administrative or legal restraints on bank interest rates, that bank rates do not become less flexible than near bank rates. Flexibility in bank rates should, in fact, be encouraged so as to avoid interest-induced destabilizing shifts of funds from banks to near banks.[23]

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question of the effects of near banks on the efficiency of monetary policy to be whether the monetary authorities can "achieve a reduction in the supply of credit" by imposing cash reserve requirements, or other direct controls, on near banks.

[21] J. G. Gurley and E. S. Shaw, *op.cit.*, pp. 289-290, list a large number of direct control measures that may be imposed on near banks to soften adverse effects of monetary policy on the banking system.

[22] W. L. Smith, "Financial Intermediaries and Monetary Controls," p. 552; also compare R. S. Thorn, "Nonbank Financial Intermediaries, Credit Expansion, and Monetary Policy," *International Monetary Fund Staff Papers,* 6, November 1958, pp. 373-381.

[23] W. P. Hogan, "Monetary Policy and the Financial Intermediaries," *Economic Record,* 36, December 1960, p. 529, advocates a more flexible interest rate policy for banks to reduce the transfer of funds to near banks in Australia. In "Catching the Nonbanks," *Economist,* London, November 21, 1964, p. 582, it is suggested that "the prime reason why the rival financial institutions have fared so much better than the banks in periods of tight money may not after all lie in their freedom from official controls as such but in the fact that their interest rates are usually far more flexible than those of the banks."

►C. RANGARAJAN

Deposit Variability in Individual Banks

This article deals with interbank differences in variability in demand deposits. It examines certain micro-economic relationships of banks—in particular, that between the size of banks and variability in their demand deposits.

Deposit variability has a definite impact on the portfolio policy of commercial banks.[1] The need for liquidity in the choice of assets is governed to a large extent by fluctuations in deposit levels. Banks with unstable deposits tend to have a more liquid portfolio because the probability that a given excess reserve position will enable a bank to meet deposit withdrawals is a decreasing function of deposit variability. The analysis of interbank variability in deposits thus throws some light on the differing patterns of asset distribution among banks. It may be noted that the formulas usually suggested for conversion of bank funds are based on the principle that the more volatile liabilities must be converted into more liquid assets. It is on this basis that banks with larger proportions of time deposits are expected to have larger proportions of loans in their portfolio. These formulas, however, obscure the fact that the same liability may be subject to different degrees of fluctuation in different banks. A major conclusion that emerges from the present empirical investigation

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[1] An empirical evaluation of the impact of deposit variability on portfolio policy was made in the author's "Variability of Demand Deposits," unpublished Ph.D. dissertation, University of Pennsylvania, 1964, pp. 158-163.

is that as the size of a bank increases, variability in its level of demand deposits decreases.

To be able to analyze in detail the degree of fluctuation in deposits in individual banks, it is necessary to construct an index of variability. The standard deviation is commonly considered a suitable measure of dispersion, but the absolute value of this measure does not indicate the relative degree of fluctuations among banks. These values have to be divided by the mean level of deposits of each bank to make a direct comparison among banks possible. The coefficient of variation, i.e., the ratio of standard deviation to the mean level of deposits, is therefore taken as the index of variability in this study.

While analyzing the characteristics that have an influence on banks' willingness to lend, Donald Hester took the ratio of variance of deposits to the mean level of deposits as the measure of variability.[2] This is not an appropriate measure for two main reasons. Firstly, variance of deposits, being money squared, has no economic meaning in itself.[3] Second, the measure chosen is not invariant with respect to the average level of deposits. If we denote coefficient of variation of deposit levels of a bank by r and average level of deposits by a, Hester's measure of variability becomes $a.r^2$, and thus the measure itself is influenced by the average level of deposits of a bank, rendering meaningless any comparison among banks with different levels of deposits. On both counts it is preferable to use the coefficient of variation as a measure of variability. This index is a pure number enabling a comparison among banks of varying sizes.

The choice between the two ratios is important since it is possible to arrive at opposite conclusions on the connection between variability and size of banks as measured by their average level of deposits. It can be shown that the two measures lead to opposite results if the deposit elasticity of standard deviation is between .5 and 1.[4] Our investigation shows that the deposit elasticity of standard deviation is .73 and thus falls between the two critical values when the two indices will lead to opposite results. In fact, based on his measure, Hester reached the conclusion that deposit variability was an increasing function of bank size whereas quite the opposite conclusion is reached in the present investigation.

I. *Factors Causing Variation in Deposits*

Only those factors that account for differences in fluctuations in demand deposits among banks will be dealt with here. Cyclical and secular factors will not be considered, in as much as these affect all banks, though this is not to deny their differential effects on individual banks.

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[2] Donald A. Hester, "An Empirical Examination of a Commercial Bank Loan Offer Function," Cowles Foundation Paper, No. 176, p. 10.

[3] For this reason Hicks preferred to use "standard deviation" instead of "variance" as a measure of certainty. See J. R. Hicks, "Liquidity," *Economic Journal*, December 1962, p. 729.

[4] Let σ be standard deviation and σ^2 the variance and $\bar{D}$ the mean level of deposits. It is possible for $(\sigma/\bar{D})$ to decrease as $\bar{D}$ increases while $(\sigma^2/\bar{D})$ to increase as $\bar{D}$ increases. The condition to be met in that case is:

$$\frac{d\ (\sigma/\bar{D})}{d\bar{D}} < 0 \text{ and } \frac{d\ (\sigma^2/\bar{D})}{d\bar{D}} > 0$$

$$\text{or } \frac{d\sigma}{d\bar{D}} \cdot \frac{1}{\bar{D}} - \sigma/\bar{D}^2 < 0, \text{ i.e., } \frac{d\sigma}{d\bar{D}_2} < \sigma/\bar{D} \quad \ldots\ldots\ldots (1)$$

$$\text{and } d\sigma^2/d\bar{D} \cdot \frac{1}{\bar{D}} - \frac{\sigma^2}{\bar{D}^2} > 0, \text{ i.e., } \frac{d\sigma^2}{d\bar{D}} > \sigma^2/\bar{D} \quad \ldots\ldots\ldots (2)$$

$$\frac{1}{2} \cdot \sigma/\bar{D} < \frac{d\sigma}{d\bar{D}} < \sigma/\bar{D} \text{ or } \frac{1}{2} < \frac{\bar{D}}{\sigma} \cdot \frac{d\sigma}{d\bar{D}} < 1$$

i.e., if the deposit elasticity of standard deviation is between .5 and 1.

Such factors as relative population changes among areas and competitive shifts in deposits will also not be considered.

A. Seasonal Factors

A major factor causing fluctuations in demand deposits is the seasonal influence. The extent of seasonal variability in individual banks will necessarily vary from region to region and according to the type of customers with which the banks deal. The seasonal influence is likely to be very dominant in banks that are located in what are described as one-industry areas. Agriculture is probably most seasonal in all its operations; this is reflected in both loan operations and deposit levels of banks located in agricultural areas. Conversely, in banks situated in areas where the economic base is more diversified, the seasonal swings are less marked. Thus, urban banks will generally be subject to less seasonal fluctuations than rural banks. But this argument has to be modified to take account of the fact that country banks maintain deposits with their correspondent city banks and that the seasonal fluctuations in their deposits are transmitted to the city banks through changes in interbank deposits. A strong similarity between the seasonal pattern of "demand balances due from banks" of country banks and that of their "total demand deposits" has been noted in some studies.[5] One effect of the holding of interbank deposits by country banks is that the seasonal pattern of total demand deposits of Reserve City banks are brought closer to that of country banks.

B. Composition of Deposits

For the banking system as a whole, overall variability during 1962 was found to be the highest in U.S. Government deposits, followed by interbank deposits and "other" deposits in that order. Thus, one factor contributing to the difference in stability in total demand deposits among banks is the composition of deposits.

Figures given by the Federal Deposit Insurance Corporation for 1964 show that the share of total deposits represented by interbank deposits was directly related to size, ranging from .3 of 1 percent in banks with deposits of $2 million or less, to 15.5 percent in banks with deposits of more than $1 billion.[6] U.S. Government deposits were more evenly distributed among large and small banks. A survey conducted by the Federal Reserve showed that the proportion of domestic business deposits to the total amount of deposits progressively increased as the size of bank groups increased and the share of individuals and farm operators declined.[7] The survey also found that the average size of account for domestic business was roughly 15 times the average size for individual accounts.

To find out if the composition of deposits accounts for differences in variability among individual banks, it is necessary to know the answers to three questions:

(1) Does the extent of fluctuation vary from one type of deposit to another in individual banks?

(2) Are personal accounts more volatile than business accounts?

(3) Does the volatility of an account increase as the size of the account increases?

It is not possible to provide satisfactory answers to these questions since the relevant data are not available. Some

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[5] Katherine Finney, *"Inter-bank Deposits,"* New York: Columbia University Press, 1958, p. 80.
C. Rangarajan, *op. cit.*, p. 61.

[6] See, *Annual Report* of the Federal Deposit Insurance Corporation, 1954, p. 74.

[7] "Survey of ownership of demand deposits," *Federal Reserve Bulletin*, April 1960, p. 369.

answers, however, may be suggested on the basis of limited information that was obtained. From the weekly statements published by the New York Clearing House, it was found that during 1962, the weekly levels of U.S. Government deposits fluctuated much more than the net demand deposits, other than government deposits, in all banks that were members of the clearing house.[8] This conclusion was arrived at by calculating the coefficients of variation in weekly levels of the two types of deposits for each bank. Data were not available on an individual bank basis to measure the volatility in interbank deposits.

It is generally thought that personal deposits are more volatile than business deposits. The *a priori* reasoning for this argument is that in the case of personal deposits, payments are spread over the entire period of, say, a month with receipts coming only at stated intervals, while in business deposits, payments and receipts occur continuously over the period. The limited information gathered as part of this empirical investigation tends to support this position.

Certain observers feel that large accounts are more volatile than small accounts. For example, Lyle Gramley writes: "Other things being equal, the more actively customers add to and withdraw from their balances the larger the swings that would be expected in a bank's total deposits. Large banks, in which many individuals and business accounts —as well as accounts of other banks— are especially active, might therefore be expected to show unusually large variations in deposits." [9] In essence, the Gramley argument is that active accounts are more volatile and that large accounts tend to be more active. But this reasoning does not rest on sound premises. There is a distinction between the "volatility" of an account and its "activeness." An account may be very active and yet may not be subject to wide swings in the actual balance. Deposit swings are caused by lack of synchronization between credits and debits. A high deposit turnover rate does not necessarily preclude a high degree of synchronization between debits and credits. Also, there is reason to doubt that activity, as measured by transactions per dollar of account, increases as the size of account increases. A study by the Kansas Bank Management Commission found that in Kansas, checking account activity, measured in terms of number of items processed monthly per dollar of demand deposits, was not materially different for banks with more than $20 million in deposits than for banks with less than $1 million in deposits.[10]

An examination of the average monthly balances of 50 personal and 50 business accounts drawn from a leading Philadelphia bank indicated that personal accounts were more volatile than business

[8] The difference between the experience of the individual banks and the banking system in this context must be noted. As far as the banking system is concerned, fluctuations in total demand deposits are less than the sum of the fluctuations in U.S. government deposits and "other deposits" because of the negative correlation between the two types. But on an individual bank basis, the negative correlation need not necessarily be present, i.e., the withdrawal from tax and loan accounts need not necessarily match the reserve gains that may occur through Treasury disbursements. The New York City special depositories, for example, account for a disproportionately large share of tax and loan credits because of the volume of Treasury marketable obligations sold in the city and the amount of taxes paid by corporations with checks drawn on their accounts with New York banks. But government payments are more evenly distributed over the country. Thus, Treasury operations, at least initially, drain funds from New York City banks.

[9] Lyle E. Gramley, "Deposit Instability at Individual Banks," *Essays on Commercial Banking*, Federal Reserve Bank of Kansas City, p. 43.

[10] "Interpretation of Size-Cost Relationship in Banking," the *Monthly Review* of the Federal Reserve Bank of Kansas City, March 1961, p. 8.

accounts. The monthly balances supplied related to the 12 months in 1963. The size of personal accounts examined varied from an average monthly balance of $300 to $195,000, while that of business accounts varied from an average of $12,000 to $2,400,000. The coefficient of variation of the monthly levels of deposits was distinctly higher in personal accounts than in business accounts. The average of the coefficient for the 50 personal accounts was .4802, compared to the average of .2513 for the 50 business accounts. On the basis of this very limited study, one cannot venture to generalize on the comparative variability in personal and business accounts. There was no indication within each type of any relationship between size of account and variability in deposits.

C. Flow of Funds Among Accounts

An important factor leading to greater stability in deposits in bigger banks is the flow of funds from one account to another. The larger the bank, the greater the probability that a check drawn on a given account will be credited to another account in the same bank. At one extreme, if we imagine there is only one bank, all debits will come back as credits except for leakage of currency to the public. As the size of a bank increases, this increased possibility of funds flowing from one account to another within the bank ensures a greater degree of stability.[11]

For this reason, even if individual accounts are volatile, the aggregate may not be.[12] From the same point of view, stability may increase if there is a wider diversification in the ownership of deposits. Where the deposits of a bank are concentrated in the sense of being drawn from one sector of the economy, the inflow or outflow is likely to be in the same direction for most of the accounts. But as bank size increases, customers are usually drawn from different sectors and this may ensure a greater stability of deposits. The advantage in this regard is greater where there is nation-wide branch banking.

Thus, the factors acting on the variations in deposits in individual banks are several, and many of the factors which act in the same direction are usually found together. The difference between small banks and big banks becomes, therefore, something more than a distinction in size unless other factors are kept constant.

II. *Empirical Findings on Deposit Variability*

In this section, results of empirical investigations on variability in demand deposits in individual banks will be reported. With the aid of data on demand balances of individual banks supplied by the Federal Reserve Bank of Philadelphia, the relationship between bank size and overall variability in demand deposits was first examined. Next, an attempt was made to isolate the seasonal variability in bank deposits and to study its relationship to the size of banks. Wherever possible, other characteristics of banks influencing variability were included in the examination.

A. Total Variability

The focus of investigation in this sec-

[11] "Bigness" of banks in this context must be related in some sense to the bigness of the market in which they operate. For example, a bank with deposits of $100 million could be "small" in New York City and could not expect much return flow of funds from a given check drawn, but it could expect a return flow of larger magnitude if the bank were located in a smaller place.

[12] This only emphasizes the point that to the extent that there is negative correlation among accounts, the variance of the total deposits in a bank will be less than the sum of variance of individual accounts.

tion is the total variability that occurs in demand deposits during a year in individual banks. By total variability is meant the overall variation, i.e., both systematic and random.

It is often contended that big banks experience greater swings in deposits than small banks. Commenting on this generally held opinion, Gramley observes: "This view is rather widespread and of such ancient origin as to warrant the title of an accepted tradition of banking." [13] Thus, the folklore of commercial banking tends to associate increased variability with larger sized banks. In specifying the characteristics that have an influence on banks' willingness to lend, Hester regarded the instability of demand deposits as an important factor. He treated a bank's expected utility of its portfolio as a function of the rate of returns on its assets, the standard deviation of rates of return, and the variance of its deposits. His conclusion on the relationship between size of bank and stability in demand deposits was that "the ratio of variance of deposits to the level of deposits is an increasing function of bank size. Thus, large banks are expected to be less willing to lend than small banks, if banks are averse to a higher deposit variance."[14] Hester's conclusion on size and stability was partly derived mathematically and partly supported by empirical evidence on some of the values in the final expression. More especially, the conclusions rests on the index, chosen by him as a measure of variability. For reasons already indicated, this measure is not an appropriate index.

On the basis of a sample survey of banks drawn from the Tenth Federal Reserve District, Gramley came to the conclusion that stability increased as the size of banks increased.[15] The deposit experience of the sample banks was analyzed in terms of the maximum percentage decline in their demand deposits in any period of six months or less between January 1955 and middle of 1957. Gramley found that in the largest size class, i.e., banks with total deposits of more than $25 million, deposit losses were approximately 20 percent smaller than in the lower size groups.

The analysis of deposit variability presented below is based on a sample of 114 banks drawn from the Federal Reserve District of Philadelphia. In choosing the sample, it was considered desirable to assign larger weights to the groups at either extreme since this would permit a reliable estimate of the regression line. For each of the banks included in the sample, the Federal Reserve Bank of Philadelphia provided the average of daily balances of demand deposits, time deposits, and total deposits for each biweekly period in 1962. Thus each bank had 26 observations for each of the three categories of deposits.

1. *The Size Factor*

Both the distribution of the index of variability in different size groups and a regression analysis indicated an inverse relationship between variability in demand deposits and size of banks, as measured by the mean level of deposits for the year. However, deposit elasticity with respect to the index of variability was not high.

The coefficient of variation, i.e., the index of variability, ranged from a low figure of .02 to a high of .17. The average for all the banks was .06. The distribution of this coefficient in different size groups pointed to a negative correlation between size and variability (see Table 1). Out of 24 banks with demand deposits of more than $10 million, 10, or 41.66 percent, had a coefficient of variation of less than .03, while only 2 out of 90 banks with deposits of less than $10 million had a coefficient of variation of less than .03.

[13] Gramley, *op. cit.*, p. 43.
[14] Donald A. Hester, *op. cit.*, p. 10.
[15] Gramley, *op. cit.*, p. 44.

Table 1

Distribution of the Index of Variability in Demand Deposits by Size of Bank

Banks with demand deposits (Dollars)	Less than .03	.03 to .039	.04 to .049	.05 to .059	.06 to .069	.07 to .079	.08 to .089	.09 and over
Less than 500,000	1	1	2	5	3	3	2	2
500,000 to 1 million	—	2	7	9	4	4	1	4
1 million to 10 million	1	9	6	9	8	1	2	4
10 million to 100 million	6	2	2	—	—	2	—	2
100 million and above	4	1	—	—	1	—	1	3
	12	15	17	23	16	10	6	15

Five of 24 big banks, or 20.83 percent, had, however, a coefficient of variation of more than .09. Looking at the results from a slightly different angle, of 12 banks with a coefficient of variation of less than .03, 10 banks, or 83 percent, were in the larger size group.

These facts lead to the conclusion that the variability in deposits as measured by the coefficient of variation has a tendency to fall as bank size increases.

The estimation of a linear relationship between size of banks and the measures of variability implied an inverse relationship between the two. A double-log relationship, on the other hand, established more firmly the negative correlation, though the relationship was not strong.

Applying the technique of least squares to the 114 sample observations, the following equations were estimated:[16]

(1)

$$\sigma = 386.2151 + \underset{(.0351)}{.3916}\ \bar{D},\quad \bar{R}^2 = .5216$$

(2)

$$(\sigma/\bar{D}) = .0662 - \underset{(.0000003170)}{.0000003368}\ \bar{D}$$

$$\bar{R}^2 = .0011$$

where

$\bar{D}$ = average level of demand deposits (in $10,000)

σ = standard deviation of demand deposit levels (in $1,000)

The coefficients for the bank-size variable in Equation (2) were negative, but not statistically significant. We have, therefore, to turn to Equation (1) to gain some knowledge of the relative variation in demand deposits in banks of different sizes. The coefficient for $\bar{D}$ was highly significant and positive in this equation. This means that σ increases as bank size increases, as is normally expected. A bank with deposits of $100 million will naturally experience a higher fluctuation in deposits in dollar amount than a bank with $100,000 of deposits. The deposit elasticity of σ however, indicates how $(\sigma/\bar{D})$ behaves as $\bar{D}$ increases. At the point of the means of σ and $\bar{D}$, the deposit elasticity was .73. Since the elasticity is less than 1, it can be concluded that $(\sigma/\bar{D})$ decreases as $\bar{D}$ increases, i.e., variability in deposits decreases as the size of bank increases.[17]

[16] Note that the index of variability is only $\sigma/\bar{D}$, but the equation relating σ to $\bar{D}$ was estimated so as to draw certain inferences from it regarding the behavior of $\sigma/\bar{D}$.

[17] In order that $\dfrac{d(\sigma/\bar{D})}{d\bar{D}} < 0$ it is necessary to show:

$\dfrac{d\sigma}{d\bar{D}} \cdot \dfrac{1}{\bar{D}} - \dfrac{\sigma}{\bar{D}^2} < 0$ or $\dfrac{d\sigma}{d\bar{D}} \cdot \dfrac{1}{\bar{D}} < \sigma/\bar{D}^2$ or $\dfrac{d\sigma}{d\bar{D}} < \sigma/\bar{D}$ since $\dfrac{d\sigma}{d\bar{D}} \cdot \dfrac{\bar{D}}{\sigma} < 1$, it implies $\dfrac{d\sigma}{d\bar{D}} < \sigma/\bar{D}$ and therefore $\dfrac{d(\sigma/\bar{D})}{d\bar{D}} < 0$.

The results obtained by using the double-log formulation brought out more explicitly the negative relationship between size and variability. The results using this relationship were:

$$(3)\quad \log \sigma = -.2331 + \underset{(.0209)}{.9345} \log \bar{D}, \quad \bar{R}^2 = .946$$

$$(4)\quad \log (\sigma/\bar{D}) = -.2572 - \underset{(.022)}{.053} \log \bar{D}, \quad \bar{R}^2 = .038$$

In Equation (4), the coefficient for log $\bar{D}$ was negative and significant, i.e., in the basic structural equations $\bar{D}$ had a negative exponent. This establishes that $(\sigma/\bar{D})$ is a decreasing function of $\bar{D}$. Much the same result is obtained by examining Equation (3). The coefficient for log $\bar{D}$ in this equation is positive but less than unity, and significant.[18] Logarithmic functions imply constant elasticities and these are given by the coefficients. Equation (3) thus gives deposit elasticity of σ of less than 1, which as pointed out earlier means that $(\sigma/\bar{D})$ decreases as $\bar{D}$ increases. It is important, however, to note that the inverse relationship between $(\sigma/\bar{D})$ and $\bar{D}$, though statistically significant, is not strong. The deposit elasticity of $(\sigma/\bar{D})$ as seen from Equation (4) is only .05, which means that a 100 percent increase in the size of banks leads to only a 5 percent decrease in variability.

2. *Other Factors*

The efforts to further improve the explanation of the variability in deposits by introducing additional factors such as the number of accounts and the volume of personal and business deposits were rendered difficult because such data for individual banks are not available. With the information obtained on the location of banks according to the region, an attempt was made to find out the impact of regional differences in terms of ocupational structure on variability of demand deposits.[19] However, because of the high degree of aggregation involved in the variables used as proxy for diversification, it is not surprising that their coefficients did not turn out to be significant.[20]

[18] The difference from unity is statistically significant.

[19] For this purpose the Federal Reserve District of Philadelphia was divided into 15 regions, a classification based on Donald J. Bogue's and Calvin L. Beale's *Economic Areas of the United States*, New York: Free Press of Glencoe, Inc., 1961.

[20] It was argued earlier that banks located in areas where the economy was more diversified would experience smaller fluctuations in deposits than those in less diversified areas. The percentage of the working force employed in manufacturing was treated as a proxy for diversification, and it was therefore expected that banks located in areas with a higher percentage of the working force employed in manufacturing would have a lower index of variability. On the other hand, the more important was agriculture as an occupation in a region, the higher would be the fluctuation in deposits in that region. The equations computed showed no relationship between occupational structure and variability. The coefficient for manufacturing had a negative sign and that for agriculture a positive sign in the equations. This is according to *a priori* reasoning, but neither of the variables was statistically significant. Some of the equations computed are given below:

$$(5)\quad \log \left(\frac{\sigma}{\bar{D}}\right) = -2.132 - \underset{(.2442)}{.1232} \log M$$

$$- \underset{(.0229)}{.0527} \log \bar{D}, \quad \bar{R}^2 = .0347$$

$$(6)\quad \log \left(\frac{\sigma}{\bar{D}}\right) = -2.629 + \underset{(.0572)}{.0259} \log AG$$

$$- \underset{(.0256)}{.04844} \log \bar{D}, \quad \bar{R}^2 = .034$$

Where M = percentage of working force employed in manufacturing industries in the region, and

AG = percentage of working force employed in agriculture in the region.

Table 2
Distribution of the Index of Variability in Time Deposits in Different Size Groups

Banks with time deposits (Dollars)	.0050 and less	.0051 to .010	.011 to .050	.051 to .10	Above 0.1	Total
Less than 500,000	—	1	2	1	—	4
500,000 to 1 million	—	—	8	17	—	25
1 million to 10 million	3	20	30	4	3	60
10 million to 100 million	1	10	7	2	—	20
Over 100 million	—	—	4	1	—	5
	4	31	51	25	3	114

3. *Variability of Time Versus Demand Deposits*

It is generally held that banks experience less variability in time deposits than in demand deposits over the short period, since time deposits are held as a means of employing savings rather than to make payments. The data on sample banks lend support to this view. An analysis of the distribution of the index of variability among the various size groups clearly indicates that the extent of variation in time deposits is very limited, (see Table 2).[21] Of the 114 banks, 84, or 75 percent, had an index of less than .05, whereas in the case of demand deposits, there were only 44 banks, or 39 percent, that had a coefficient of variation of less than .05. The average variability in the sample banks for time deposits was .012, compared to .06 for demand deposits.

[21] In measuring variability in time deposits in the sample banks, it was necessary to take note of the fact that almost every bank experienced a month-to-month increase in time deposits during 1962 following the rise in maximum interest rates payable on time deposits. It was therefore decided to eliminate this trend and take only the ratio of the standard deviation of the residual to the mean level of time deposits as the index of variability. The variance of the residual for each bank was obtained by regressing the bi-weekly levels of time deposits on time trend.

B. Seasonal Variability

The most important element in the systematic variation in any time series during a year is the seasonal factor. The last section was concerned with total variability which included both seasonal and nonseasonal variations. In this section the relationship between size of banks and the extent of seasonal variability will be examined.

1. *Technique of Measurement*

In the absence of a seasonal index for each of the banks included in the sample, it was decided to estimate the following function for measuring seasonal variability in each bank.[22]

$$\left(1 - \frac{D_t^j}{\bar{D}^j}\right) = \alpha + \beta\,(1 - S_t) + u_t$$

$$j = \ldots\ldots\ldots 114 \text{(banks)}$$

$$t = \ldots\ldots\ldots 12 \text{ months}$$

[22] This formulation was preferred over regressing $\frac{D_t^j}{\bar{D}^j}$ on S_t because it is possible with this formulation to give the same interpretation for the values of β whether $\frac{S_t^j}{\bar{D}^j}$ is above or below 1.

where D_t^j = the level of demand deposits of the j^{th} bank in month t.

D^j = the average monthly level of demand deposits of the j^{th} bank.

S_t = the seasonal adjustment factor for the month t for demand deposits in the Third District (the index will vary depending on whether j is a Reserve City or country bank).

Underlying this technique of measurement is the assumption that the seasonal pattern in demand deposits of the sample country banks conformed to the pattern in the aggregate demand deposits of all Third District country banks, and that the only difference among them was one of amplitude. The estimated value of β would indicate the amplitude of seasonal pattern in each bank compared to the average pattern in the District. The value of $\bar{R}^2$ obtained for each equation would show the extent of variability accounted for by seasonal factors in each bank.

2. *The Impact*

The equations estimated according to the procedure outlined above showed that of the total 114 banks, the movement of deposits correspond to the seasonal pattern of the District in only 54 banks, i.e., the coefficient for the seasonal index variable was significant only in 54 equations. This does not mean that there is no seasonal element in deposit variation in the other banks, but that their seasonal pattern differs from that of the pattern for the entire District. The 54 banks whose seasonal pattern resembled that of the District were not concentrated in any particular size group. In almost every size group, approximately half the banks corresponded to the pattern of the District, as can be seen from Table 3.

Table 3

Conformity to the Seasonal Pattern of the District, According to Size Groups

Banks with demand deposits (millions of dollars)	Total number of banks	Number of banks which conformed to the pattern of the District
Less than 2	65	25
2 to 10	24	15
10 to 100	13	7
Above 100	12	7

By restricting the analysis to the 54 banks whose seasonal pattern conformed to that of the District, it was found that the amplitude of the seasonal pattern decreased with increases in the size of banks. This result was obtained by regressing the β coefficients obtained for the 54 banks on the size of bank. The equation obtained was:

$$(5)\ \beta = 2.835 - \underset{(.0000132)}{.0000285}\ \bar{D}\quad \bar{R}^2 = .115$$

The coefficient for $\bar{D}$ was negative and significant, implying that as the size of a bank increased, the amplitude decreased. The addition of the regional variable, i.e., the percentage of the working force employed in agriculture, did not improve the explanation of the variation in amplitude.

In the 54 banks whose seasonal pattern resembled that of the District, no relationship between size of banks and the extent of seasonal variability was established. The $\bar{R}^2$ in each of the equations estimated gives the proportion of variances in $\left(1 - \frac{D_t^j}{\bar{D}^j}\right)$ accounted for by the equation. This gives an idea of the total variability accounted for by seasonal factors in each bank. Therefore, the values of $\bar{R}^2$ obtained were related to the size of banks, and the resulting equation

showed no relationship between size of banks and the extent of seasonal variability.

In summary, the major conclusion of this study is that as the size of banks increased, variability in their level of demand deposits decreased. As stated at the outset, this finding has a bearing on the portfolio policy of banks. This suggests that one of the economies of large-scale banking operations lies in reduced deposit variability.

►YAIR E. ORGLER

Joint Demand and Time Deposits: An Application of Inventory Control

I. *Introduction*

Shifts between demand and savings accounts have been a recurring problem for commercial banks in recent years. Competition between commercial banks and savings and loan associations for time or savings deposits is restricted by regulations fixing maximum rates that can be paid. However, commercial banks have used rate increases to attract deposits within the limits set by interest rate regulations and, as a result, have experienced higher interest costs.

This study attempts to show that a basic inventory model can be used to determine an optimal joint demand and savings account which will be efficient and profitable for commercial banks. The additional costs are negligible for any bank with a modern data processing system. The joint account model provides a mechanism for automatic transfers from the checking account to the savings account (and vice versa if desired), thus limiting excess holdings of noninterest bearing balances and increasing the household's earnings from its liquid assets. Use of the joint account model benefits the commercial banks by enabling them to retain deposits that might otherwise be lost to other institutions. The model is an application of inventory theory.

The purpose of inventory theory is to rationalize the large number of inventory

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decisions made at the clerical level for routine, low-value items. A cash balance account has a high value; it is a single item of its kind within a firm and involves decisions at the middle or top management level. On the other hand, households' demand deposits at commercial banks are routine, low-value cash balances. This similarity enables inventory control to be applied.

II. *A Simple Deterministic Inventory Model*

The underlying similarity of inventory control and the management of cash balances, first explored by Baumol, has recently been reexamined by Miller and Orr.[1] During the 13 years between the two publications, a surprisingly small number of papers attempted to pursue this promising approach. Others, notably Brunner and Meltzer have criticized the model on theoretical and empirical grounds.[2] This section discusses the basic inventory model very briefly; the following sections will demonstrate that it is applicable to the problem of allocating deposits between demand and time accounts.

In the fundamental "economic lot size" model,[3] all the parameters—costs, demand rates, and so on—are assumed to be known in advance. This is a continuous-time model in which the same quantity is ordered whenever the amount on hand reaches the reorder level. A single parameter Q, the size of the order, is sufficient to specify the policy. Allowing the available stock to drop to zero when the new order Q arrives, clearly defines the reorder level s: $s = Dt$ where D is the demand rate (units demanded per unit of time) and t is the lead time.

The most economical policy, determined by the optimum order quantity Q^* for which total cost is a minimum, is $Q^* = \sqrt{\frac{2DS_o}{I}}$ where S_o is the setup or order cost and I is the cost of holding inventory during the demand period. A graphical representation of the model is given in Figure 1.

This model assumes, *inter alia,* a fixed and known demand. The model will be modified here (1) to avoid the assumption of known demand, and (2) to incorporate characteristics of bank deposits.

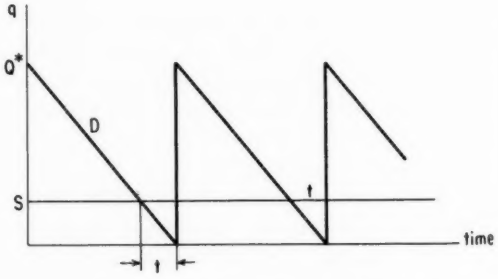

Figure I. A Simple Inventory Model

[1] W. J. Baumol, "The Transactions Demand for Cash: An Inventory Theoretic Approach," *Quarterly Journal of Economics,* LXVL, November 1952; M. H. Miller and D. Orr, "A Model of the Demand for Money by Firms," June 1965, (Unpublished).

[2] K. Brunner and A. H. Meltzer, "Economics of Scale in Cash Balances Reconsidered," (Unpublished); A. H. Meltzer, "The Demand for Money: A Cross Section Study of Business Firms," *Quarterly Journal of Economics,* LXXVII, August 1963.

[3] This model appears in almost every inventory management text. For more details, see C. W. Churchman, R. L. Ackoff, and E. L. Arnoff, *Introduction to Operations Research,* New York: J. Wiley and Sons, Inc., 1957, Chapter 8.

III. *The Joint Deposits Models*

Two forms of the simple inventory control model are applicable to cash balances. In one, the continuous case, the demand deposit balance is examined after each transaction. In the second, the discrete case, the amount is examined only once in a specific period such as on a certain day of every month. Since the basic reason for examining the balance is to find out whether balances can be transferred from the demand deposit to the time deposit account, monthly examinations between the first and the tenth of the month (date selected by the depositor) seem to be the most suitable arrangements. Nevertheless, the two cases will be described for each of three models. An * will be used to denote the discrete (periodic) cases.

The notations used are defined as follows:

Q_s . . . amount of dollars transferred from the demand deposit to the time deposit account

Q_d . . . amount of dollars transferred from the savings account to the checking account

UTL . . . upper transfer level (a specific balance in the demand deposit)

LTL . . . lower transfer level (a specific balance in the demand deposit)

RL . . . return level (a specific balance in the demand deposit)

T . . . length of period between two successive adjustments (the discrete case)

t . . . current period

B_t . . . the balance of the demand account at period t

o . . . (subscript) indicates a fixed transfer quantity.

A. Model I: Upper Transfer Level Only

In this simple case, the amount of money in the demand deposit fluctuates up and down according to the depositor's transactions. The only control is an upper transfer limit. In both discrete and continuous cases, the balance B_t will trigger a transfer if it exceeds the upper limit. This limit is actually a modified reorder level from the inventory model. Instead of triggering an order, it initiates a transfer which resembles an inventory order.

The amount transferred to the time deposit can be a fixed or variable sum. If the transfer is fixed, the same amount is transferred whenever an adjustment is made. In the variable plan, only the amount that exceeds the upper limit is transferred to the time deposit:

$$Q_s = B_t - UTL$$

All the transfers are unidirectional in this model. They prevent the balance from exceeding a desired upper level, providing the depositor with higher earnings from his liquid assets. There is no delay in making transfers in the continuous case, and a maximum delay of T in the discrete plan. On the other hand, the continuous case will involve negligible gain for most households and higher operating costs for the bank, since the number of adjustments is greater than the number of transfers in the discrete plan.[4]

The selection of the fixed transfer option will reduce the number of adjustments in the continuous case, since the amount transferred will always be greater than or equal to the amount transferred

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[4] If the depositor is charged with a fixed fee for each transfer and the interest rate on savings accounts is compounded daily, the depositor will choose the continuous plan when

$$r \sum_{i=1}^{n} Q_{si} (T - t_i) > nc$$

where r is the daily interest, n the number of transfers in period T, and c the fee for each transfer.

Figure 2. UTL and Q_s

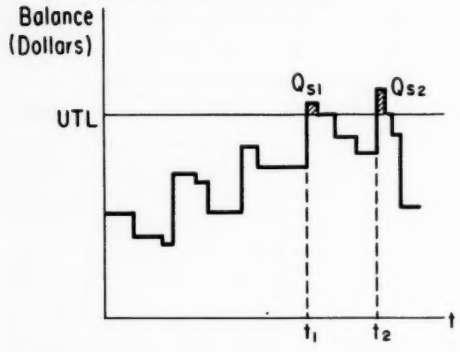
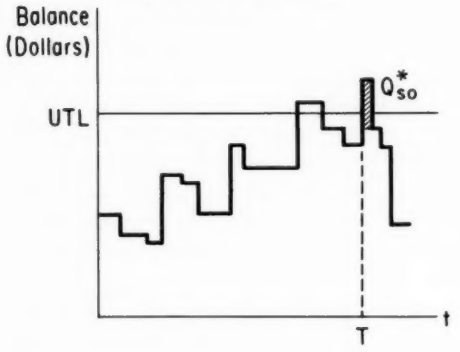


Figure 3. UTL and Q^*_{so}



in the variable plan.[5] If the depositor prefers transfers of "round" sums he will select this alternative. On the other hand, when B_t is only slightly above UTL and Q_{so} is relatively large compared with UTL, the demand deposit balance may be excessively reduced. This difficulty is avoided by introducing a return level as shown in case 3.

A continuous case with the variable transfer quantity option is illustrated in Figure 2, while Figure 3 shows a discrete plan with fixed transfers. Since the transaction frequency in a regular checking account is not large, all graphs are shown as step functions. Nevertheless, in a rapidly changing account a continuous description can provide a good approximation.

B. Model 2: Upper and Lower Transfer Levels

Here we introduce the lower level and transfers in both directions. When the balance of the demand deposit drops below the LTL, a fixed or variable amount is transferred to the demand deposit. Q_{do} is not related to Q_{so}, which is determined as specified in model 1. It is clear that a variable transfer $Q_d = LTL - B_t$ is nonsensical, since it keeps the balance at the lower limit. Any outflow will result in another transfer until the depositor makes a new deposit. The fixed transfer alternative, therefore, should be chosen with Q_{do} sufficiently large to prevent frequent transfers from the savings account.

The advantage of this model over the previous one is the elimination of the possibility of running out of demand deposits. When a minimum balance is required to avoid service charges, the depositor will find the lower transfer level model a useful tool to reduce his holding cost. The timing and frequency of transfers will depend, as before, on the type of model (continuous or discrete). A combined alternative also can be selected.[6] Consider the following mixed-timing combination as an example. Continuous transfers are made from the time deposit

[5] If $B_t - UTL > Q_{so}$, the resulting balance will be still higher than UTL, hence, there will be a total fixed transfer of $2Q_{so}$, or generally, if $(n + 1)\ Q_{so} > B_t - UTL > nQ_{so}$, the fixed transfer will be $(n + 1)\ Q_{so}$.

[6] The number of possible combinations among transfer levels, transfer quantities, and timing is quite large. Whereas some plans can be excluded from consideration (e.g., LTL only with variable transfers), the others should be evaluated with respect to their marginal costs and benefits.

Figure 4. UTL, LTL, Q_{so}, Q_{do}

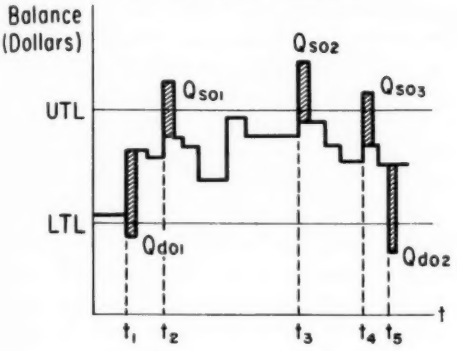
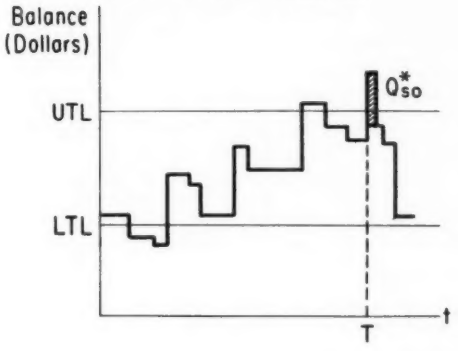


Figure 5. UTL, LTL, Q^*_{so}, Q^*_{do}



to the demand deposit.[7] This yields an immediate adjustment if the balance drops below LTL. The adjustments in the other direction are made at discrete intervals. It was stated that continuous transfers into the time deposit involve little or no gain for most households and higher operating costs for the bank.

Figures 4 and 5 present the continuous and discrete cases (both directions), respectively. The transfer amounts in the two figures are fixed for both "in" and "out" adjustments.

Note that in the discrete case only one transfer was made, whereas in the continuous case five offsetting transfers took place. The balance of the savings account depends on the magnitude of Q_{so} compared with Q_{do}.

C. Model 3: UTL, LTL, and One Common Return Level

This model includes a third level—the return line. This limit is similar to the S level in the well-known "S,s" inventory policy. An order is placed only when the amount on hand x, is less than the reorder level s. The quantity ordered (in case of an order) is S-x. In the joint deposits model $x=B_t$, $S=RL$, $s=UTL$ or LTL. Whenever the balance exceeds the UTL or drops below the LTL, an adjustment will be made to restore the balance to a return level RL. This implies variable transfers, the amount depending on the difference between the balance and RL. When $B_t > UTL$, the transfer sum will be:

$Q_s = B_t - RL$ or $Q^*_s = B_T - RL$.

When $B_t < LTL$, an opposite adjustment will take place:

$Q_d = RL - B_t$ or $Q^*_d = RL - B_T$.

RL does not need to be equidistant between UTL and LTL; its position is determined by the depositor, who gains the advantage of knowing exactly what his balance will be after each adjustment. Moreover, RL prevents the fluctuations of the balance around the upper and lower levels which might happen in the previous models, especially when the transfer quantities are variable.

The depositor can select lower RL for transfers into the checking account, and an upper RL for transfers in the other direction. But the introduction of a fourth level will only increase the com-

[7] Frequent transfers from the savings account to the demand deposit might raise legal problems if judged to be a violation of the prohibition of interest payments on demand deposits. In this case, only discrete transfers (into the demand deposit) should be included in the model. The time period between two adjustments should be equal to or longer than the minimum period required by law. The discrete timing period can be different for UTL and LTL.

Figure 6. UTL, LTL, RL
(continuous adjustments)

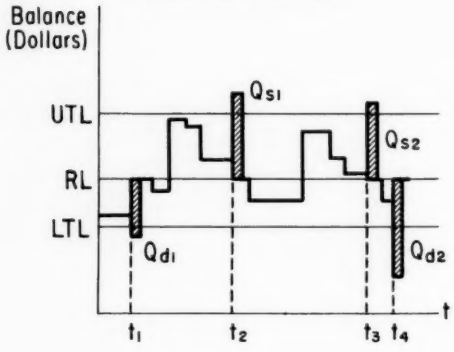
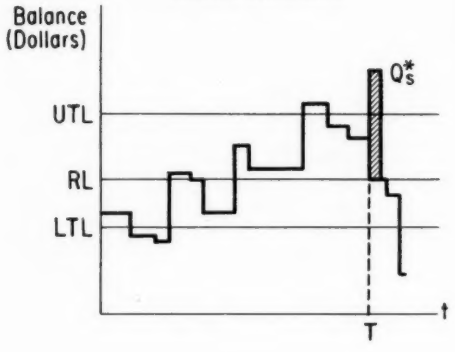


Figure 7. UTL, LTL, RL
(discrete adjustments)



plexity of the model, as well as operating costs, without additional benefits. The three levels model is essentially the Miller-Orr model.[8] Figure 6 illustrates the continuous case, while Figure 7 shows the discrete one.

IV. *Determination of Transfer Quantities and Levels*

It is clear that the three "double" models are only a few of many possible combinations. The question, therefore, is which model should be chosen, and how are RL, LTL, and UTL determined?

The inventory control method optimizes cash balances of deposit holdings, either by minimizing the cost or by maximizing the gain from the joint time and demand deposits. Although it is feasible for a bank to develop a plan for each customer, the cost of creating individual models will more than offset the gain from the whole project. More likely, each commercial bank will offer a few programs, based on market research, observation of customers' checking accounts, and operating costs. The individual household depositor will select one of these programs and it will be up to him to set the transfer levels and quantities based upon service charges on checking accounts, the interest rate on savings accounts, the pattern of inflow and outflow of funds in his account, and his savings goal. A significant change in any of these variables will lead to an adjustment in the parameters of the model.

The model depends on the expected receipts and payments of the household. The individual usually has no control over his receipts, but he can plan his schedule of payments. An optimum solution to the cash balance problem should, therefore, include an optimal payment schedule, and not only the distribution of cash between the time and demand deposits. The incorporation of an optimal payment schedule in the model is beyond the scope of this paper. It should be noted, however, that the individual can slightly improve the outcome of his model by a planned payment schedule. For example, he can prevent his balance from often dropping below LTL if a penalty payment is involved. Yet, a carefully selected plan with suitable transfer levels and quantities will yield the same results without involving continuous control and planning by the depositor.

The selection of adjustment times will probably favor the discrete case. In most banks, any sum deposited in the savings

[8] Miller and Orr, *loc. cit.*

account between the tenth and the end of the month earns interest from the beginning of the following month. The date selected will depend on the timing of wage or salary payments, the main source of inflow for most households. The periodic transfer will also be less expensive to maintain by the banks, and can be easily combined with the monthly statement where the closing balance will determine the amount transferred.

In order to arrive at an optimum solution of transfer levels, quantities and timing, a utility function for the household should be incorporated in the computation. Instead, I have based the model on aspiration levels to determine a satisficing rather than an optimizing, solution.[9] For example, the decision of a depositor might be: "If by the sixth of the month my balance exceeds $400, transfer $50 into my savings account." More formally, this is Model 1 with UTL = $400, and Q^*_{80} = $50. Without some assumptions about the utility function, we cannot determine how far this solution deviates from the optimum.[10]

V. *Advantages and Limitations of Joint Deposits*

Both the banking system and the public will benefit from the joint accounts plan. The cost of operating the project should not be significant, provided that it functions along simple lines as discussed in Section III. The need for simplicity and the lack of knowledge about the individual's utility function, limit the model to a satisficing, rather than an optimizing, solution to the cash balance problem. A near-optimum solution can be achieved if banks offer a variety of plans, so that the individual can choose among them. Even if the best plan is selected, however, the transfer levels and quantities are determined according to aspiration levels. The difference between this solution and the optimum one will not be significant for most households, since only small interest gains are involved.

An automated joint account will yield interest on idle funds without delay.[11] It takes time for a depositor to recognize that he has some excess funds in his checking account. Additional time is required to decide what to do with this money, and if he decides to hold it as a time deposit, his action will be further delayed until he finds time to execute his decision. If he chooses to deposit at a savings and loan association which pays a higher nominal interest rate, the bank loses deposits.

Suppose that the depositor intends to keep a certain sum in a savings account for one year, and that the joint deposit model reduces the delay by one month. This will increase the yield on the transferred sum by 8.33 percent. If the difference in the interest paid by savings and loans is less than this percentage, the depositor will keep his savings at the commercial bank. Moreover, the depositor avoids transfer costs (including time), since the transfers in the joint plan are done automatically. It is clear that for longer delays and for shorter holding periods, the advantage of joint deposits becomes more and more significant.

Recently, the commercial banks have competed successfully with savings and loans principally by raising the interest rates on time deposits.[12] The

[9] J. G. March and H. A. Simon, *Organizations*, New York: J. Wiley and Sons, Inc., 1958, Chapter 6.

[10] Assuming that the individual has a linear utility function, we can determine the distribution of the demand deposit balance and solve for the optimal parameters for the depositor.

[11] It should be noted that whatever the model, a discrete transfer plan means that there is only one automatic adjustment per period. Other transfers can be made by choice—e.g., if the balance runs too low due to unforseen circumstances and the plan does not include a lower transfer level (LTL).

[12] The pressure of commercial banks to enable them to raise interest rates on time deposits resulted in several changes in regulation "Q".

joint deposits approach will have the same effect on the competitive position of banks as higher interest rates, and will involve smaller costs. As a direct result of the joint deposit plan, commercial banks will increase their time deposits and reserves, respectively, and benefit from larger earning assets.

VI. *Conclusions*

This study treated deposit balances as an inventory, and discussed various alternatives for deciding upon the distribution of balances between demand and time accounts. It was shown that the substitution of the inventory "order level" for an "upper transfer level," with other slight modifications, led to a joint checking and savings account model which is similar to a deterministic inventory model. Although each bank might wish to modify the plan suggested here and consider additional variables, this application of inventory theory to households' deposits has advantages both for the commercial banks and the public.

► H. ROBERT HELLER

Borrowers in International Capital Markets

I. *Introduction*

Since the imposition of the United States Interest Equalization Tax, there has been a significant increase in the volume of international bonds. Borrowers as well as banks or brokers have developed new or improved ways of issuing and placing bonds in international markets. As a consequence of this rapid development of international capital markets, reliable information concerning them is difficult to acquire.

Some recent publications have dealt with this subject.[1] Most of these have concentrated on the development of the markets themselves, the instruments traded, and the innovations that took place. Very little attention has been directed to the identity of the ultimate lenders and borrowers in these international capital markets. It is by now

H. Robert Heller is Assistant Professor of Economics at the University of California, Los Angeles, California. The author is indebted to the International Bank for Reconstruction and Development for making the necessary data available and to the UCLA Committee on International and Comparative Studies for financial support.

[1] U.S. Congress, Joint Economic Committee, *Economic Policies and Practices,* Paper No. 3, "A Description and Analysis of Certain European Capital Markets," Washington, D. C.: Government Printing Office, 1964; John Davenport, "The Fine Art of Raising Cash Abroad," *Fortune,* May, 1966; Ernest Schwarzenbach and Jack Zwick, "The European Response to U.S. Capital Restrictions," *The National Banking Review,* 3, March 1966, pp. 347-357; Robert Gemmill, "New Foreign Bond Issues in the U.S. Market," *Federal Reserve Bulletin,* May 1963; Jean van der Mensbrugghe, "Foreign Issues in Europe," *IMF Staff Papers,* July 1964.

commonly agreed that many of the European markets serve merely as a meeting place for borrowers and lenders of different nationality, while the residents of the market country seldom appear in the role of lender or borrower. The bourses of Luxembourg and London are prime examples of this type of activity.

The present paper will investigate the identity of the ultimate borrowers in international bond markets. Unfortunately, we cannot analyze the lenders' side in these markets. Yet, there is good reason to believe that the vast majority of all funds used to purchase international bonds come from foreign sources. British subjects are effectively barred from purchasing dollar bonds issued in London, because of the premium at which investment dollars are traded. The domestic Luxembourg market is much too small to absorb even a minute fraction of the issues traded. In Switzerland, a "gentlemen's agreement" between the national bank and the commercial banks limits the amount that foreigners can invest in Swiss securities, and, as a consequence, foreigners concentrate on foreign securities denominated in Swiss francs. In Germany, it was the imposition of a 25 percent capital yield tax on foreign-held German securities which made foreigners switch to foreign securities floated in Germany. All these developments tend to increase the percentage of international issues that find their way into foreign portfolios. Little, however, is known about the identity of these foreign lenders. Oil money from the Near East or speculative capital from Latin America may find its way through a numbered Swiss account to any one of the major international capital markets. Portfolios may be held in different names to conceal the identity of the true lender for tax purposes, or simply to preserve a desired degree of anonymity.

On the other hand, borrowers in these international bond markets are readily identifiable, and we shall concentrate on them. There are several questions worth investigating: the extent to which individual countries actually utilize international capital markets; which market places are preferred by individual countries; and the identity of the ultimate borrowing units within the borrower country.

To simplify matters, we shall concentrate on publicly-issued bonds in the "major" international capital markets–here defined as the American, British, Dutch, German, Swiss and Eurodollar markets. Occasionally, there have been international bond issues in different markets, but their aggregate amount is very small and we shall ignore them in this study.

Also, we will restrict ourselves to the time period since 1957, when international capital markets started to develop on the European continent for the first time after World War II. Prior to 1957, only Switzerland and the United States had international capital markets of any significance.

II. *The Borrower Countries*

The strongest and most persistent borrowers in international capital markets are the countries that expanded rapidly during the first half of the 20th century and have by now a substantial industrial sector. These countries might be called the 20th century or second generation follower countries. They are characterized by the use of modern methods of production and a sufficiently trained labor and management force to enable them to adapt rapidly to any new production techniques. In this group of countries we find both the heaviest and the most consistent borrowers. All countries borrowing an aggregate amount over $300 million during the period 1957 to 1966 fall in this group (see Table 1). The list is led by Canada ($1,358.8 million), Australia ($766.1 million), Japan ($586.1 million), Norway ($413.1 million), Israel ($385.4 million), Denmark ($337.3 million), and New Zealand

TABLE 1

Foreign Bonds Issued Publicly in Major Markets

Borrower	1957	1958	1959	1960	1961	1962	1963	1964	1965	TOTAL
Argentina					10.4					10.4
Australia	20.0	136.8	81.0	139.8	105.9	113.0	119.6		50.0	766.1
Austria	1.2	34.3	27.3		21.6	5.8	11.2	18.0	11.8	131.2
Belgium	42.0		11.6	25.9	95.0	30.0				204.5
Canada	357.2	324.8	281.7	183.3	34.5	2.3	25.0		150.0	1,358.8
Congo		15.0								15.0
Denmark			35.1	11.6	21.0	48.8	60.0	125.8	35.0	337.3
Finland					7.0		12.5	103.5	25.0	148.0
France		11.7	50.0		28.9	49.2	30.5	13.5	41.5	225.7
Germany		2.8		11.6	11.6	30.0	48.6	37.1	8.0	149.7
Great Britain			12.5	25.5	37.1	44.9	16.2	14.9	48.1	199.2
Holland		15.0	18.5		11.5					45.0
Iceland						5.6				5.6
Ireland									2.8	2.8
Israel	37.2	46.0	42.5	51.3	60.2	46.4		98.0	3.8	385.4
Italy			40.0		34.8		35.0	25.0	51.9	186.7
Jamaica			12.5				4.2	9.0	3.2	28.9
Japan			30.0		40.0	91.0	139.0	198.6	87.5	586.1
Luxembourg							13.9		35.4	49.3
Malaysia								14.0	25.0	39.0
Mexico							40.0	68.0	27.5	135.5
New Zealand		66.0			76.0	53.0		42.0	48.0	285.0
Norway		28.5	22.1	21.6	31.6	36.9	52.8	112.1	107.5	413.1
Panama		16.8								16.8
Philippines									15.0	15.0
Portugal					1.8				40.0	41.8
Rhodesia		34.0	28.0							62.0
South Africa		53.7	25.6	5.6		11.6			12.5	109.0
Spain							4.6	4.6		9.2
Sweden			9.3		9.2				60.0	78.5
United States		11.7	11.6	25.5	13.9	13.9			205.0	281.6
Venezuela									15.0	15.0
Country Total	457.6	797.1	739.3	501.7	652.0	582.4	613.1	884.5	1,109.5	6,337.2
Council of Europe								5.5		5.5
Eurofima			9.2	7.0	15.2		9.2	21.8	24.2	86.6
ECSC	35.0	50.0		25.0	13.8	45.8		61.9	48.5	280.0
Eur. Inv. Bank					13.8	8.3	15.0	53.3	31.0	121.4
Interfrigo			2.3				3.5			5.8
Int. Am. Dev. Bank						75.0		15.0		90.0
IBRD								150.0	276.3	426.3
Soc. Moselle					7.0					7.0
Int. Org. Total	35.0	50.0	11.5	32.0	49.8	129.1	27.7	307.5	380.0	1,022.6
Grand Total	492.6	847.1	750.8	533.7	701.8	711.5	640.8	1,192.0	1,489.5	7,359.8

Source: International Bank for Reconstruction and Development, Washington, D.C.

($285.0 million). The most consistent borrowers also are to be found here: Four of the six countries borrowing over $300 million entered the market in all but one year of the period surveyed. The other two countries participated in seven out of nine and six out of nine years, respectively. These are the highest participation rates to be found among any countries in the world.

It is not difficult to explain the predominant position of the 20th century follower countries. As a general rule, they are politically stable, have responsible and competent management in industry and business, and no longer suffer from the violent economic growing pains characteristic of the take-off period. Capital needs in these countries are still substantial, either to augment abundant supplies of land (Canada, Australia), or manpower (Japan). As a consequence, they represent an almost ideal investment opportunity for international funds.

The next group of countries, arranged according to amount borrowed, comprises most of the heavily industrialized countries of the world: the United States ($281.6 million), France ($225.7 million), Belgium ($204.5 million), Great Britain ($199.2 million), Italy ($186.7 million), and Germany ($149.7 million). These countries, most of which have quite well developed domestic capital markets, might resort to international borrowing for various reasons: balance-of-payments considerations, favorable conditions prevailing in foreign capital markets, or a tightness of the domestic capital market. It may also be true that the sum to be raised is so large that several capital markets have to be tapped simultaneously (the Italian ENEL bonds, which were floated, simultaneously in all countries of the EEC are a prime example of this type of operation). Finally, firms might plan an international expansion of their operations and attempt to raise the funds in the country where they intend to make the expeditures.

Only a few underdeveloped countries were able to raise funds in international capital markets. In general, these countries are not able to offer conditions that will induce private investors to purchase their securities. They have to rely on direct foreign investment, foreign aid payments from foreign governments, or borrowings through international organizations.

International organizations like the International Bank for Reconstruction and Development and the Inter-American Development Bank play an important role here. They channel many of the funds obtained in international markets into underdeveloped countries. Because of their specialization in this type of activity, their trained personnel, and their ability to appraise individual projects "on the spot," they are in a much better position to evaluate individual loan applications from underdeveloped countries than is the international investor who lacks these facilities.

III. *The Markets*

The second question to be investigated is where individual countries float their bonds. As we have indicated, we will restrict ourselves here to the major capital markets of Germany, Holland, Switzerland, the United Kingdom, the United States, and the Eurodollar markets. (See Table 2).

There was heavy borrowing in the German capital market by the other European countries during the period 1957 to 1965. The aggregate amount borrowed was $634.2 million, $199.2 million of which went to other European countries. A special position was held by Japan ($150.0 million), which since 1962 has participated actively in the German market. In 1965, the United States entered the market for the first time, mainly because of balance-of-payments considerations. In recent years, international organizations raised $202.5 million in Germany.

TABLE 2

Foreign Bonds Issued Publicly in Major Markets, 1957-1965

Borrower	Germany	Holland	Switzer-land	United Kingdom	United States	Euro-Dollars	TOTAL
Argentina	3.0		7.4				10.4
Australia		11.0	27.8	393.3	285.0	50.0	766.1
Austria	33.8		51.0		15.0	30.5	131.2
Belgium	19.3	51.9	48.3		85.0		204.5
Canada			21.9		1,336.9		1,358.8
Congo					15.0		15.0
Denmark	18.8	15.2	46.3		115.0	142.0	337.3
Finland	47.5		7.0		67.5	26.0	148.0
France		24.8	80.9		90.0	30.0	225.7
Germany			149.7				149.7
Great Britain	25.0	5.5	168.7				199.2
Holland			11.5		33.5		45.0
Iceland				5.6			5.6
Ireland				2.8			2.8
Israel					380.4	5.0	385.4
Italy	25.0	6.9	34.8		60.0	60.0	186.7
Jamaica				16.4	12.5		28.9
Japan	150.0		11.6	14.0	278.5	132.0	586.1
Luxembourg			24.3			25.0	49.3
Malaysia				14.0	25.0		39.0
Mexico					135.5		135.5
New Zealand				210.0	55.0	20.0	285.0
Norway	29.6	18.7	50.3		121.5	193.0	413.1
Panama					16.8		16.8
Philippines					15.0		15.0
Portugal	.3	.5	1.0		20.0	20.0	41.8
Rhodesia				56.0	6.0		62.0
South Africa	24.4		23.2	21.4	40.0		109.0
Spain			9.2				9.2
Sweden			18.5			60.0	78.5
United States	55.0		76.6			150.0	281.6
Venezuela					15.0		15.0
Country Total	431.7	134.5	870.9	732.5	3,224.1	943.5	6,337.2
Council of Europe						5.5	5.5
Eurofima	27.5	8.3	50.8				86.6
ECSC	62.5	38.6	13.9		135.0	30.0	280.0
Eur. Inv. Bank	35.0	41.4				45.0	121.4
Interfrigo			5.8				5.8
Int. Am. Dev. Bank	15.0				75.0		90.0
IBRD	62.5		13.8		350.0		426.3
Soc. Moselle			7.0				7.0
Int. Org. Total	202.5	88.3	91.3		560.0	80.5	1,022.6
Grand Total	634.2	222.8	962.2	732.5	3,784.1	1,024.0	7,359.8

Source: International Bank for Reconstruction and Development, Washington, D.C.

The Dutch market has been characterized by inconsistency. A lifting of government restrictions in one year will be followed by its re-imposition the next. Of the $222.8 million borrowed in Dutch markets, $146.1 million were raised in 1961 alone. The only consistent borrowers in this market have been international organizations like the European Coal and Steel Community and the European Investment Bank.

The Swiss market, which was very strong in the early sixties, has declined considerably in importance. The volume of bonds issued decreased from a high of $217.7 million in 1961 to a mere $87.3 million in 1965. The list of borrowers in the Swiss market is dominated by the highly industrialized nations of the world: Great Britain leads with $168.7 million during the 1957-1965 period, followed by Germany ($149.7 million), France ($80.9 million), and the United States ($76.6 million). International organizations raised $91.3 million in the Swiss market during this period.

The British market is virtually confined to the Commonwealth, because bonds from outside the Commonwealth have to be acquired with investment dollars. Australia ($392.3 million), New Zealand ($210.0 million), Rhodesia and Nyasaland ($56.0 million), and Jamaica ($16.4 million) lead the list of borrowers. No international organization floated bonds in the British market.

The United States represents the most important international capital market. The aggregate amount of capital borrowed amounted to some $3,784.1 million, more than half of the world-wide total. With $1,336.9 million during the period 1957 to 1965, Canada was by a wide margin the most important borrower of capital in the United States. Another consistent borrower was Israel, which raised $380.4 million.

The Eurodollar bond market, which emerged as a counterpart to the Euro-

TABLE 3

Foreign Bonds Issued Publicly in Major Markets, 1957-1965

Borrower	Governments	Polit. Subdivisions	Private Entities	TOTAL
Argentina	10.4			10.4
Australia	762.8	3.3		766.1
Austria	92.1	9.3	29.8	131.2
Belgium	160.8		43.7	204.5
Canada	95.0	989.4	274.4	1,358.8
Congo	15.0			15.0
Denmark	201.3	68.3	67.7	337.3
Finland	138.0	10.0		148.0
France	65.6		160.1	225.7
Germany			149.7	149.7
Great Britain			199.2	199.2
Holland	18.5	15.0	11.5	45.0
Iceland	5.6			5.6
Ireland			2.8	2.8
Israel	372.1		13.3	385.4
Italy	120.1	20.0	46.6	186.7
Jamaica	28.9			28.9
Japan	361.6	95.0	129.5	586.1
Luxembourg			49.3	49.3
Malaysia	39.0			39.0
Mexico	127.5		8.0	135.5
New Zealand	285.0			285.0
Norway	212.9	123.9	76.3	413.1
Panama	16.8			16.8
Philippines	15.0			15.0
Portugal	40.0		1.8	41.8
Rhodesia	62.0			62.0
South Africa	78.1	1.8	29.1	109.0
Spain			9.2	9.2
Sweden	45.0		33.5	78.5
United States			281.6	281.6
Venezuela	15.0			15.0
Country Total	3,384.1	1,336.0	1,617.1	6,337.2

Source: International Bank for Reconstruction and Development, Washington, D.C.

dollar money market after the imposition of the United States Interest Equalization Tax in 1963, developed rapidly in the following two and one-half years and reached a volume of some $505.5 million in 1965. The most active countries in this market are the United States ($150.0 million), the Scandinavian countries ($421.0 million), and Japan ($132.0 million). The actual trading of the bulk

of the Eurodollar issues takes place in London, Luxembourg, and New York.

IV. *The Ultimate Borrowers*

The third question to be considered is the identity of those ultimately responsible for the bonds floated. Bonds may be floated by national governments, political subdivisions like states and municipalities, and by private entities. The bonds of the political subdivisions and private entities, in turn, may or may not be guaranteed by the national government, political subdivisions, banks, or parent companies. To simplify our analysis, we shall concentrate on bonds which are issued or guaranteed by national governments, political subdivisions, and private entities. The relevant data are presented in Table 3.

As a general rule, we find that the more highly advanced the country, the greater the percentage of bonds which are floated by private entities. Germany, Great Britain, and the United States issued only private bonds. None of them were guaranteed by the government. We find that for the 20th century follower countries, which we identified previously as heavy borrowers in international capital markets, the vast majority of all bonds are either floated or guaranteed by a public body. 55.4 percent of all bonds floated by these countries (Australia, Canada, Denmark, Israel, Japan, New Zealand, and Norway) were issued or guaranteed by the national government, 31.0 percent by a political subdivision, and only 13.6 percent were issued by private borrowers without governmental guarantees. The borrowing by other countries was also strongly dominated by governmental or government-guaranteed borrowing.

V. *Conclusion*

We can conclude that borrowing in international bond markets is of great importance to nations which, while having the necessary technical knowledge, need foreign financing for their rapidly expanding industries and investments in social overhead capital. Governmental guarantees may often be a necessary condition for the successful tapping of foreign capital markets by private companies in these countries. Only the most well-known private companies in the advanced industrialized nations succeed in borrowing internationally on a large scale.

Underdeveloped countries find it very difficult to raise money in the international bond markets. International organizations bridge the gap by raising funds and relending them to the underdeveloped countries. As a direct vehicle for the financing of the development of underdeveloped areas the international bond market makes only a minimal contribution.

Administration of the Discount Function: A Comment

► JIMMIE R. MONHOLLON and JAMES PARTHEMOS

In the December 1965 issue of *The National Banking Review*, Messrs. Lapkin and Pfouts attempt to demonstrate "(1) that there are important differences between Districts in the relative magnitude of member bank borrowing; and (2) that the differences in member bank borrowing between [Federal Reserve] Districts can be accounted for in some measure by differences in the administration of the discount window." [1] It is the purpose of this commentary to show that the analysis offered in support of the second of these propositions proves nothing respecting the administration of the discount function.

The reasoning that brings Lapkin and Pfouts to the conclusion that interdistrict administrative differences account for interdistrict borrowing disparities begins with the premise that one ". . . would expect to find aggressive use of reserves positively correlated with discounting by member banks." [2] In their formal analysis, they measure "aggressive use of reserves" (or bank "aggressiveness") by the ratio of required reserves (RR) to total reserves (TR) and assume that the greater $\frac{RR}{TR}$, the more aggressively reserves are used. Their measure of discounting in the several Reserve Districts is cast in relative terms, with total borrowings (B) taken as a fraction of total reserves. Thus, in terms of their statistical model, the Lapkin-Pfouts initial premise

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[1] "The Administration of the Discount Function," *The National Banking Review*, 3, December 1965, p. 179ff.

[2] *Ibid.*, p. 185.

translates into the proposition that one would expect to find the ratio of required to total reserves positively correlated with the ratio of borrowings to total reserves. In more formal terms, the statistical analysis proceeds from the premise that

$$\frac{B}{TR} = f\left(\frac{RR}{TR}\right).$$

The translation is not quite the same as the ambiguous verbal proposition that one "would expect to find aggressive use of reserves positively correlated with discounting . . ." It is not intuitively obvious, nor is it apparent from *a priori* analysis of bank reserve management practices, that banks will generally borrow larger fractions of their total reserves from the discount window the greater their success in converting reserves to earning assets. The proposition is, however, testable empirically, although in fairness to Lapkin and Pfouts it should be understood that the most appropriate data for such a test were not immediately available to them. In any event, a simple correlation of $\frac{B}{TR}$ and $\frac{RR}{TR}$ for Fifth District banks in 1964 shows no significant relationship between the two.[3] This factor alone is sufficient to cast serious doubt on the Lapkin-Pfouts conclusion.

Lapkin and Pfouts proceed to rank the 12 Reserve Districts by the magnitude of $\frac{B}{TR}$ and again by the magnitude of $\frac{RR}{TR}$ ("aggressiveness"), and to compute rank correlation coefficients for reserve city banks and for country banks. Neither of these coefficients is found to be statistically significant. On the basis of this result, Lapkin and Pfouts conclude that since interdistrict differences in $\frac{B}{TR}$ are not explainable by "aggressiveness," they must be due to differences in discount administration. In their words: " . . . if the administration of the discount function were uniform from District to District, we would expect a positive as well as a significant correlation between aggressiveness $\left[\frac{RR}{TR}\right]$ and borrowing $\left[\frac{B}{TR}\right]$, since the needs of aggressive banks are usually stronger than those of nonaggressive banks. The correlation coefficients, however, do not show this relationship. Therefore, we have reason for saying that the administration of the discount function varies from District to District."[4]

The validity of this conclusion would be seriously impaired if it could be demonstrated that no significant correlation exists between relative borrowing and "aggressiveness" in a situation of known uniformity in discount administration. For a given Reserve District, discount administration is, or should be, uniform and accordingly should not figure in distorting the expected positive correlation between borrowing $\left(\frac{B}{TR}\right)$ and "aggressiveness" $\left(\frac{RR}{TR}\right)$. Yet a simple correlation analysis of data for the 382 country banks and 18 reserve city banks in the Fifth Federal Reserve District in 1964 yields the following results:[5]

[3] See footnotes 4-6, pp. 90-91.

[4] *Ibid.*, p. 185.

[5] Variables are defined in precisely the same way as in the Lapkin-Pfouts study, including the use of annual averages of daily figures. The only difference is in the use of individual bank data instead of aggregative data of all member banks in each Federal Reserve District. The use of individual bank data in evaluating the conclusion of the Lapkin-Pfouts study is appropriate since their analysis proceeds from an assumption about the behavior of individual banks. The coefficient of correlation ($\bar{R}$) and the coefficient of determination ($\bar{R}^2$) are adjusted for the size of the sample.

Country banks:

$$\frac{B}{TR} = -1.227 + \underset{(.019)}{.026}\,\frac{RR}{TR}$$

$$\bar{R} = .049$$

$$\bar{R}^2 = .002$$

Reserve city banks:

$$\frac{B}{TR} = -9.385 + \underset{(.099)}{.101}\,\frac{RR}{TR}$$

$$\bar{R} = .052$$

$$\bar{R}^2 = .003$$

In each case, the size of the standard error indicates that the regression coefficient is not significantly different from zero.[6]

This suggests that something is amiss in the Lapkin-Pfouts analysis. Their article offers a number of specific points to which exception may be taken, but its fundamental shortcoming is its loose, and rather naive, specification of the relationship on which the analysis rests. The authors do not address themselves explicitly to the question of the forms of the demand for and the supply of discount accommodation. It is clear, however, that their measure of "aggressiveness" $\left(\frac{RR}{TR}\right)$ is intended as a proxy for a number of variables that would appear as arguments in most expressions of the demand function for discount accommodation.[7]

Whether Lapkin and Pfouts view discount administration as affecting borrowings from the demand side or from the supply side is not obvious from their analysis, but a parenthetical statement in one of their footnotes provides a clue to their position. They note:

> We recognize that some banks that are aggressive by our standards might, for a variety of reasons, prefer to adjust their reserve positions without recourse to the discount window—through the Federal funds market, perhaps . . . . When a member bank is unwilling to borrow (at the discount window, presumably), however, one cannot be certain whether the reluctance is the result of the attitude of the Reserve Bank officials, or whether it reflects some other consideration instead. In any case, we believe that the unwillingness to borrow for reasons other than the administration of the discount window is the exception rather than the rule.[8]

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[6] See footnote 4, p. 90.

The same conclusion is reached if the regression is run using only the data from the 83 country banks and the 13 reserve city banks which borrowed at the discount window in 1964.

Country banks:

$$\frac{B}{TR} = 1.807 + \underset{(.066)}{.030}\,\frac{RR}{TR}$$

$$R = .051$$

$$R^2 = .003$$

Reserve city banks:

$$\frac{B}{TR} = -19.593 + \underset{(1.670)}{.211}\,\frac{RR}{TR}$$

$$R = .039$$

$$R^2 = .002$$

With both classes of banks, the coefficient of determination adjusted for the size of sample is negative. This occurs only when the F ratio is less than one, in which case, of course, there is no evidence of correlation.

[7] In places, they seem to confuse the demand for discount accommodation and the demand for borrowings in general. For example, on page 183 they note: "Indeed, the forces that might ultimately determine the extent to which member banks seek accommodation at the discount window are obviously numerous and disparate. In any case, all of these forces become effective with regard to borrowing only when a bank is in danger of operating with inadequate reserves and *must, as a result, discount.*" A few lines further on, and in the same general context, they add: "To put the matter bluntly, we proceed on the assumption that aggressive use of reserves *is an indicator of high demand for funds* and that nonaggressive use of reserves *indicates low demand for funds.*" (Italics are added.) Whether the demand for "funds" is exercised only at the discount window or more generally the reader is left to guess.

[8] *Ibid.*, p. 183, fn. 5.

The negatively phrased assumption contained in the final sentence of this quotation (and which rests on simple assertion rather than on either *a priori* or *a posteriori* argument) is perhaps not altogether the same as the more positive proposition that member banks' willingness to borrow at the discount window depends on discount administration. But the general context leaves little doubt that this is precisely the position taken by Lapkin and Pfouts.[9]

In any event, it appears reasonable to argue that implicit in the Lapkin-Pfouts model is the presumption that the quantity of member bank borrowing (again relative to total member bank reserves) is a function of the ratio of required to total reserves and of discount administration. In brief, and more formally, they appear to specify the demand function for discount accommodation as $\frac{B}{TR} = f\left(\frac{RR}{TR}, A\right)$, where A stands for discount administration and $\frac{RR}{TR}$ is a proxy for an unspecified number of loosely specified arguments. They reason that the absence of significant formal correlation between $\frac{B}{TR}$ and $\frac{RR}{TR}$ implies a significantly high correlation between $\frac{B}{TR}$ and A.

The demand for discount accommodation is a special topic in the study of the banking system's demand for reserves. Systematic expressions of bank demand for discount accommodations must take account not only of bank reserve management policies but also of convenience factors, of demand conditions confronting individual banks, of the relative cost of alternative means of raising funds (including liquidation of assets as well as borrowing), and numerous other factors. Discount administration, including the spirit as well as the letter of Regulation A, is no doubt one of these factors, as the Federal Reserve Act intended it to be. In any event, the form of the demand for discounting is extremely complex and the Lapkin-Pfouts specification is probably not even a close approximation. Apart from the authors' obvious propensity to confuse the demand for discount accommodation with the demand for borrowing in general, it is doubtful that $\frac{RR}{TR}$ is a satisfactory proxy for the numerous arguments, other than discount administration, in the demand function for discount accommodation. The interdistrict differences in borrowing which Lapkin and Pfouts note could have been the result of interdistrict differences in any of a combination of determinants which are not satisfactorily subsumed in their relation.

[9] It might be noted here that Reserve Bank administration of the discount window seldom, if ever, involves any outright refusals of accommodations to particular applicants. Rather, consultations with individual banks over possible abuse of the discount privilege consist primarily of a review of the appropriate uses of the discount window as outlined in Regulation A. The usual effect of the consultation is to make the member bank more cautious respecting the purposes for which it applies for accommodation. Hence, it is reasonable to consider that the supply of discount accommodation at any time is perfectly elastic at the going discount rate and that discount administration affects the quantity of borrowings through its effects on the demand for such accommodations. Whether or not Lapkin and Pfouts reason this way we cannot be sure. In any event, we do not argue with the hypothesis that discount administration is a factor in the demand for discount accommodation. We take exception, however, to the Lapkin-Pfouts statement, quoted above, which appears to imply that discount administration is the overriding consideration in member banks' choices between borrowing at the discount window and acquiring funds from alternative sources.

Administration of the Discount Function: Reply

► DAVID T. LAPKIN and RALPH W. PFOUTS

In our article, "The Administration of the Discount Function," we attempted to determine whether the rather permissive general wording of the Federal Reserve Act and the regulations pertaining to discounting were interpreted differently by the individual reserve banks.[1] If they were, the volume of discounts would, other things equal, differ substantially among the 12 Districts. Because all of the relevant data necessary to make a judgment in this matter were not available to us, we had to proceed indirectly. We used two basic measures, applying them to reserve city banks and country banks in each of the 12 Reserve Districts. One measure, the ratio of member bank discounts to total member bank reserves, enabled us to compare the relative volume of borrowing at the discount window in Reserve Districts of considerably different size, and the other, the ratio of required reserves to total reserves, enabled us to compare the aggressiveness of member banks.

The basic assumption underlying our analysis is that aggressiveness is directly correlated with member bank borrowing at the discount window, and that "if the discount windows were available on the same terms in each District the more aggressive banks, with their stronger demands, would make the most use of the discount window in each District." [2] Our analysis revealed that the rank correlation between aggressiveness and borrowing among member banks in the 12 Districts was not significant. Thus, we concluded with the following rather bland statement: "We have presented factual information that is compatible with the hy-

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[1] David T. Lapkin and Ralph W. Pfouts, "The Administration of Discount Function," *The National Banking Review*, 3, December 1965, p. 179.

[2] *Ibid.*, p. 185.

pothesis of interdistrict differences in the administration of the discount window. The factual evidence is not compatible, we argue, with uniform administration of the discount function." [3]

Messrs. Monhollon and Parthemos, apart from their general strictures against our methodology, have presented only one piece of evidence to refute our general conclusion.[4] They found that in one year, 1964, within the Fifth Federal Reserve District (where it can be assumed there is uniform administration of the discount window for all member banks), aggressiveness and member bank borrowing were not significantly correlated.

Why Monhollon and Parthemos find this result so interesting is not clear. Do they mean to suggest that their finding for one year has general applicability? Do they imply that, *within* Reserve Districts, *and for extended periods of time*, no significant relationship exists between aggressiveness and borrowing at the discount window? If they do, it is a remarkable implication indeed, and we would welcome the data that support it. In this connection, we wonder; why, with all the data available to them (but not to students outside the system), do Monhollon and Parthemos present findings for only one year?

Nevertheless, the results presented by Monhollon and Parthemos, are not at variance with our general conclusions. The direct correlation that we assume between aggressiveness and borrowing at the discount window does not, nor did we expect it to, always hold true. Special circumstances, operating over relatively short periods might cause member banks, which by our definition are somewhat less aggressive, to seek greater accommodation at the discount window than the more aggressive member banks. Unexpectedly large adverse clearings, or a particular asset portfolio composition that might produce some "lock-in" could conceivably produce the results found by Monhollon and Parthemos. There are undoubtedly others. The important question is whether, in general, the most aggressive member banks make the most use of the discount window, *ceteris paribus*. We believe that they do; evidently Monhollon and Parthemos believe that they do not.

In their comment, Monhollon and Parthemos include two points that convey the "straining at gnats" air of their commentary. Impelled to share with us some "inside information" regarding the administration of the discount window, Monhollon and Parthemos inform us that Reserve Bank officials, seldom, if ever, refuse requests for accommodation at the discount window. We appreciate any information that helps us to understand the decision-making process within the Federal Reserve System. In this case, however, the information is superfluous. Apart from the authors' personal knowledge, the article by C. R. Whittlesey in the *Quarterly Journal of Economics*, cited in our article, made the same point seven years ago.[5] The point is now widely understood outside the Federal Reserve System.

Monhollon and Parthemos take considerable pains to inform us that banks can adjust their reserve positions in ways other than borrowing at the discount window. Their concern is prompted presumably, at least in part, by our failure to specify "at the discount window" every time we discuss member bank borrowing. We would have thought they were aware of our understanding of this point since we explicitly mention one of the alternatives in our article.

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[3] *Ibid.*, p. 186.

[4] Jimmie R. Monhollon and James Parthemos, "Administration of the Discount Function: A Comment," *The National Banking Review*, 4, September 1966, p. 89.

[5] C. R. Whittlesey, "Credit Policy at the Discount Window: Reply," *The Quarterly Journal of Economics*, May 1959, p. 337.

We believe that most of the criticisms made by Monhollon and Parthemos stem from their misunderstanding of our methodology. They seem to believe that, as in the case of a mathematical theorem, if a single counter example can be found, our argument is demonstrated to be invalid. Thus, by analyzing data in a single year, in a single Reserve District, they seem to think they can disprove our general conclusion. Yet, as we sought to convey, we were concerned with an empirical tendency to which there were certain to be exceptions.

The possibility that Monhollon and Parthemos misunderstood the methodological basis of our discussion is given additional weight by their use of functional notation in their interpretation of our statements. It is clear from the context that they had in mind a numerical function, since the range of their function (B/TR) is numerical. It also seems likely, that they had in mind a single-valued function. Apparently, they believe our thesis to be that to any value of required reserves as a proportion of total reserves, there corresponds some unique value of borrowing as a proportion of total reserves. It is difficult to deduce anything else from their commentary that would have any empirical relevance.

We did not intend to convey this kind of relationship. Had we been required to describe it in mathematical language, we would have referred to the relationship between borrowing and aggressiveness in terms of a regression based on random variables, or on a combination of deterministic variables and random variables. In fact, we implied by noting the possibility, indeed the certainty, of exceptions that we did not expect unique, deterministic relationships. Our statement carried an implication of the presence of error terms and random variables rather than deterministic relationships.

Another apparent misinterpretation of our discussion occurs when Monhollon and Parthemos state that we appeared to specify the demand function for discount accommodation as having B/TR as the dependent variable while RR/TR (required reserves as a proportion of total reserves) and A, where A stands for administration, as the independent variables. They also state we reasoned ". . . that the absence of significant formal correlation between B/TR and RR/TR implies a significantly high correlation between B/TR and A."

We did not suggest the line of thought outlined in the previous paragraph and we want to make it clear that we do not in any way associate ourselves with that view. Nor do we believe that we wrote anything that could give rise to that interpretation of our paper.

At no point did we suggest that administration of the discount function is quantifiable. Nor did we suggest that administration of the discount window is a variable in the sense of being defined over some number set. We do not believe that our statements could reasonably be interpreted as suggesting that a numerical functional relationship exists between B/TR and A.

Another point on which confusion seems to exist is the matter of specifying the demand for discount accommodation. While recognizing the difficulties of this problem, it was not necessary to study the nature of this demand. We simply were not investigating demand for reserves. We were contending that regardless of whatever forces cause banks to borrow, we would expect the more aggressive banks to borrow more and to discount more. Their particular reasons and motives for borrowing are not relevant to this purpose. If differences in discount administration exist between Districts, the relationship between aggressiveness and borrowing will be disturbed.

Moderated Exchange Rate Variability: A Comment

►HENRY N. GOLDSTEIN

Unhappy with the obvious drawbacks of rigid, but occasionally and reluctantly repegged exchange rates, and fearful of the explosive possibilities of a system of freely flexible rates, Professor J. Carter Murphy has recently suggested that we try something in between.[1] What the world needs, he argues, is a system that would provide each country with sufficient exchange rate flexibility to moderate the policy dilemma posed by simultaneous slack internal demand and external payments deficit,[2] but which would forestall "destabilizing speculation" in the exchange market. Professor Murphy sets forth some ingenious blueprints for such a system. In my view, however, his proposal has a number of serious drawbacks.

Under the Murphy Plan, each of the main industrial countries would define an initial parity for its currency in terms of gold. On any given day, the actual price of gold, in terms of each such currency, would be maintained within 1.5 percent of par by official purchases or sales of gold. But each country's parity would be reset daily to equal the moving average of closing market rates for gold over the preceding "n" days.

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[1] J. Carter Murphy, "Moderated Exchange Rate Variability," *The National Banking Review*, 2, December 1965, pp. 151-161.

[2] Or its mirror image—excess aggregate demand internally and an external payments surplus.

Should a country have a payments deficit at any initial parity, its reserve losses would thus be accompanied by a depreciation of its currency against gold and also against the general average of other currencies. Some of these currencies would be simultaneously appreciating against gold (and thereby against the currency of the deficit country in question). Taking n = 307, these arrangements would allow the conventional exchange rate between any two currencies, say the dollar price of sterling, to appreciate by about 6 percent a year, assuming the U. S. to have a persistent payments surplus and the U. K. a persistent payments deficit.

As Murphy points out, exchange rate adjustments of this magnitude would help make payments surpluses and deficits "self-eliminating," increasing policy-makers' freedom to stabilize the domestic economy. Of course, increased exchange rate variability would also reduce pressure on governments to impose *ad hoc* restrictions on trade and capital movements. But Murphy further maintains that such exchange rate movements would be neither so large, nor so predictable in direction, as to induce an unmanageable volume of speculative, short-term capital transfers. In my view, unless discretionary monetary policy is abandoned and complete reliance for internal stabilization placed on fiscal policy, this claim is untenable.

Thus, assume that Country D has a payments deficit and Country S a payments surplus. With the Murphy Plan in operation, the market would expect the S-currency to rise in price in terms of the D-currency. Define the respective currency units so that the initial spot price of the S-currency in terms of the D-currency is 1.00. If the "representative speculator" felt the odds were ten-to-one that the spot exchange rate would climb to 1.01 in three months, what would he do? Murphy suggests that he would do nothing. For the anticipated exchange rate change is at a rate of 4 percent per annum and this, he argues, is too small to attract any disturbing volume of speculative funds. This argument fails to consider that a speculator can also earn an interest-return on his holdings of S-currency (unless the authorities in S can prevent their financial institutions from paying such interest).[3] Thus, if the three-month rate in S were 4 percent, our speculator could expect to earn 8 percent per annum on his money with a reasonable degree of confidence. Such an incentive might well induce an embarassing outflow of funds from D.[4] The incentive would be higher still if short-term rates in S exceeded 4 percent.

Concern over this point must give way, however, to the more serious possibility of speculation through the forward market. If short-term interest rates in S were higher than rates in D, the forward price of the S-currency would have to be at a discount, relative to the spot rate, for "interest-parity" to prevail. If R = spot rate, F = three months' forward rate, i_d = three months' (annual) interest rate in D, and i_s = three months' (annual) interest rate in S, the interest parity condition

[3] In recent years the Swiss authorities seem to have managed to enforce such a prohibition on foreign-owned speculative funds with considerable success. Whether they could do so under the revised rules of the game proposed by Murphy is another question. Still another question is whether countries other than Switzerland could enforce such a prohibition under these revised rules. Even if they could, it is possible that their domestic residents could repatriate owned (or borrowed funds) from weak-currency countries, still presenting a formidable problem.

[4] Note that if the actual change in the exchange rate were smaller than 4 percent per annum, the speculator's earnings would be reduced; on the other hand, the actual resulting appreciation of the S-currency might also exceed 4 percent per annum.

would be: $\frac{F}{R} = (1 + \frac{i_d}{4})/(1 + \frac{i_s}{4})$.[5]

Suppose $i_d = 4$ percent, $i_s = 6$ percent, and $R = 1.00$. Then interest parity would be achieved only if $F = 0.99$ (approximately). If the expected spot rate three months hence is 101, clearly the representative speculator will prefer to go long of the S-currency via the forward market. Suppose that our speculator sells 99,000 units of the D-currency forward but is compelled to put up a 10 percent cash margin in the D-currency. If his expectations about the spot rate three months hence prove to be correct, he will have earned a profit at an annual rate of 81 percent.[6]

An anticipated rate of return of this magnitude—even if it were substantially reduced by "the uncertainty factor"—would be likely to generate a massive wave of forward purchases of the S-currency. Not only would these forward purchases tend to erase the forward discount on the S-currency; in all probability, they would actually cause that currency to have a forward premium, with the forward rate being forced up to 101, the expected level of the spot rate three months hence. Only when the forward rate had risen this high would speculators tend to concentrate their activities in the spot market.

But, this is not the end of the story. True, with the forward rate at 101, the expected rate of return on speculation (via the spot market) falls to only 10 percent per annum. But now, with $i_d = 4.00$ percent, $i_s = 6.00$ percent, and $F = 1.01$, there exists a 600 basis point incentive for covered arbitrage funds to move from D to S. Present evidence suggests that substantial flows of covered funds tend to be stimulated whenever covered incentives exceed 30 to 40 basis points.[7] It is frightening to contemplate the volume of funds that would move in response to a stimulus twenty times as large.

The policy implication is obvious. If massive flows of covered arbitrage funds are to be prevented, short-term rates of interest in strong-currency countries must be below short-term rates of interest in weak-currency countries and by margins that fully offset the expected degree of appreciation of the strong-currency in the spot exchange market. In short, Murphy's proposal would not achieve one of its main aims. Far from freeing monetary policy for domestic objectives, it would bind it to the dictates of a country's external position.

A proposal very similar to Murphy's has recently been advanced by Professor Meade.[8] Meade suggests that countries be allowed:

> To alter the par value of their currencies by not more than 1/6 percent in any one month if, but only if, they were faced with a continuing balance-of-payments deficit and to appreciate it by this amount if, but only if, they were faced with a continuing surplus. . . . This system might perhaps be called that of the *Sliding Parity*.[9]

Unlike Murphy, Meade acknowledges that such a proposal would probably place monetary policy in a strait jacket. Thus, he writes:

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[5] See L. B. Yeager, *International Monetary Relations*, New York: Harper & Row, 1966, p. 29.

[6] A deposit of 9,900 in D-currency enables him to sell 99,000 of D-currency for delivery in three months. If the spot rate which emerges in three months in fact equals 101, our speculator could liquidate his forward contract and realise a profit of 2,000 (in the D-currency). This is a quarterly rate of 2,000/9,900 corresponding to an annual profit rate of 80.8 percent.

[7] See Bank of England *Quarterly Bulletin*, June 1964, pp. 106-107.

[8] James E. Meade, "Exchange-Rate Flexibility," *International Payments Problems*, (A Symposium Sponsored by the American Enterprise Institute, Washington, D. C., September 23-24, 1965), pp. 31-45.

[9] *Ibid.*, p. 42.

> Let us take the extreme possible case. Suppose that A's currency is confidently expected to appreciate at the maximum rate of 2 percent per annum while B's currency is confidently expected to depreciate at the maximum rate of 2 percent per annum. B's currency would then be expected to depreciate in terms of A's currency at the rate of 4 percent per annum. To prevent the wholesale movement of short-term funds from B to A to take the prospective profit on the exchange rate the short-term rate of interest would have to be maintained in B four points above the level in A—for example, at 6 percent per annum in B and 2 percent in A. This means that to work a system of this kind the national monetary authorities would have to cooperate in setting their short-term interest rates in the interests of preserving balance-of-payments equilibrium. They would have to rely on budgetary policies and—in so far as they can be determined independently of short-term rates—upon long-term rates but not upon short-term rates, for the control of domestic economic expansion.[10]

Recent investigations of the nature of the term structure of interest rates suggest that long-term rates cannot be "determined independently of short-term rates," at least not to any great extent.[11] Thus the Meade-Murphy proposals would require participating countries to adopt fiscal policies of a sophistication and flexibility far surpassing anything yet devised and tested. For example, suppose that the United States tried to maintain "full employment without inflation" with a 2 percent Treasury Bill rate. Could we readily determine the degree of fiscal restraint that would be required for such a policy to succeed?

Notwithstanding this technical difficulty, one wonders whether the U. S. Congress is likely to divest itself of its Constitutional prerogatives in the field of Government spending and taxation at anytime in the near future. If not, a discretionary fiscal policy would seem out of the question for the United States, as would the adoption of a sliding gold parity for the U. S. dollar. (On this score, the recommendation of a sliding parity for sterling seems less far-fetched.)

It may be worth noting that these objections to "moderated exchange rate flexibility" do not apply to fully flexible exchange rates. Under fully flexible rates, speculators cannot, as a group, feel confident that the exchange rate will move in a known direction in the near future. For if they did, their resulting purchases and sales would quickly move the rate until a balance of bullish and bearish sentiment was established. Indeed, such a balance would constantly tend to be maintained by the sensitive reactions of the exchange rate itself. Professor Murphy rules out fully flexible rates on grounds of "destabilizing speculation." In the view of many eminent economists, however, the thesis that such speculation would be almost certain to accompany fully flexible rates remains a "nonfact." [12] Certainly the history of the Canadian dollar during the 1950's fails to support this thesis.[13]

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[10] *Ibid.*, pp. 42-43.

[11] According to the well-known hypothesis advanced by Hicks and Lutz, the present height of the yield curve for an n-year loan is the average of the present one-year rate and the expected one-year rates prevailing at the beginning of each of the next n-one years. David Meiselman has recently formulated an interesting rehabilitation of this model in *The Term Structure of Interest Rates*. Meiselman's model is cogently summarized, and subsequent modifications and extensions by other writers noted, in a review by Burton G. Malkiel in *The American Economic Review*, December 1964, pp. 1149-1151.

[12] This is the term used by Professor Harry Johnson in his review of Robert V. Roosa's *Monetary Reform for the World Economy;* the term is applied to the latter's contention that fixed exchange rates are necessary to avoid destabilizing speculation. See H. G. Johnson, "Roosa on International Monetary Reform," *The National Banking Review*, 3, December 1965, p. 189.

[13] A masterful review of the Canadian experience in the 1950's is given in Leland Yeager, *op. cit*, Chapter 24.

Moderated Exchange Rate Variability: Reply

►J. CARTER MURPHY

Mr. Goldstein's comment indicates that I failed to make clear to him several aspects of the proposal for moderated exchange rate variability. The crux of his criticism lies in his assumption that speculators will feel highly confident of their prediction of a future value for the exchange rate. A major advantage, in fact, which the proposed arrangement has, certainly as compared with existing arrangements, is that a "representative speculator" will rarely have an opportunity to feel "ten-to-one" sure that a country's currency will depreciate by one percent in three months. More important, if a circumstance should arise in which opportunities for speculative gain via the exchange rate would be relatively free of risk, that circumstance would be self-eliminating and would generate a repatriation of capital in due time. In any event, the order of gains of which a speculator might be assured is not of the magnitude Goldstein illustrates.

The exchange policy rule I have proposed permits the exchange rate to adjust by as much as 3 percent on any given day and permits even the official parity to adjust 1.5 percent over a quarter. This formula surely will not often allow speculators to feel "ten-to-one" safe in betting heavily that the exchange rate will be depreciated by, say, one percent three months in the future. It is the absence of risk of loss that makes speculation so enticing under the adjustable peg system of exchange rates now in effect; the introduction of such a risk is one of the major attractions of allowing a moderate amount of variability in the rates.

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There is no doubt that conditions could arise in which the future course of a moderated exchange rate would be foreseeable. A disturbance to the balance of payments which is sharp, and expected to persist over many weeks or months, would drive the spot exchange rate to its support level where its continued movement would be limited to the rate of change of the parity exchange rate. Implementation of the moderated variability scheme, however, would give governments strong incentive to follow policies which would minimize the suddenness of balance-of-payments shifts. There is no doubt that such restraint could have salutary effects.

Even if a moderated rate should lag somewhat behind the adjustment clearly dictated by the market, speculation would take a form rather different from that which Goldstein describes. Since the forward market has been left free in my proposal, the forward exchange rate would move promptly to the level it is expected to reach on the forward contract date. The forward rate has the capability of adjustment without lags that Goldstein admires in freely fluctuating spot rates; it is strange that he neglects this in his discussion. The 86 percent gain Goldstein calculates would no more be available to the main body of speculators under moderated exchange rate variability than it would under freely fluctuating rates where, he asserts, "purchases and sales would quickly move the rate until a balance of bullish and bearish sentiment was established." Moreover, it must be noted that these uncovered transactions in forward exchange do not, of themselves, give rise to a current drain on country D's monetary reserves since they require payment in foreign currency only in the future. It is only excessive demand for foreign exchange in the spot market that gives rise to a troublesome reserve drain.

Actually, the spot market would undergo changes simultaneously with the forward market, and not following the latter. Uncovered speculation in the spot market would yield capital gains at the rate of 4 percent per annum if it were known that the rate three months hence would be at a one percent premium. In addition to the capital transfer inspired by this opportunity for capital gain, further uncovered investments would probably be induced by the now secure feeling about the future exchange rate, for the higher foreign than domestic interest rate would tempt investors who were previously restrained by feelings of risk. However, it seems confusing to say here, as Goldstein does, that the speculation earns 10 percent. It earns 4 percent and offers some additional security to those who want to take advantage of the preexisting 2 percent interest rate differential. The pressure on the forward market is communicated to the spot market via the opportunities for covered interest arbitrage–and it will be the arbitrageurs who for the most part supply the forward exchange sought by the bullish forward market speculators. Under the hypothesis of a one percent premium on S-currency in the three-months forward market and interest rates of 4 percent in D and 6 percent in S, an investor can obtain an extra .5 percent in three months, or 2 percent per annum, over the 4 percent per annum available in D by shifting funds to S.

The important thing to note, however, is that the passage of time would bring an exchange rate adjustment which would eliminate this kind of stimulus to uncovered speculation and covered interest arbitrage, if both countries were able to avoid policies which create continuous unidirectional disturbances to the exchange markets. Where the disturbance leading to an expectation of a one percent depreciation is of a once-and-for-all sort, for example, the basis for the speculation and interest arbitrage circle of transactions would begin to fade after the first day and would vanish long before the 90-day forward contracts matured. Fur-

thermore, and this is quite important, when the interest parity was restored through the exchange rate adjustment, the restoration would stimulate a repatriation of the funds previously extracted from D. Interest arbitrageurs would have no incentive to recontract for forward cover on continued holding of assets in S-currency when the arbitrage basis has been removed and would close out the contracts by which they have prearranged the exchange of their S-currency for D-currency. Speculators who have purchased S-currency forward would now come into possession of S-currency (or be faced with a contract to buy it) and would be under pressure to repatriate these funds via the spot market in order to liquidate the loans which were the basis of their speculative leverage. The implication of this is that when movements of the exchange rate are foreseeable due to a lag in the rate's adjustment, the termination of the unusual condition will generally also be foreseeable together with the limits on the duration of the official financing required. This is certainly an improvement over the adjustable peg arrangement in which the duration of a disturbing flight from a currency is typically highly obscure.

I have contended that the proposal for moderated exchange rate variability could provide for such exchange rate flexibility that those lags which Goldstein fears would be infrequent. Unfortunately, this cannot as well be said of the similar proposals for a "sliding parity" or a "crawling peg" put forward by Professor Meade and Professor Williamson.[1] The chief difference between those proposals and mine is that Meade and Williamson would put the decision to effect a gradual adjustment of a parity exchange rate at the discretion of governments. Since any government might be tempted to engineer a currency depreciation aimed at nothing more than competitive advantage for that nation's products on world markets when devaluation is a discretionary matter, both Meade and Williamson insist on safeguards against this. Meade says countries "would undertake to depreciate their currencies by 1/6 percent in any one month if, but only if, they were faced with a continuing balance-of-payments deficit and to appreciate by this amount if, but only if, they were faced with a continuing surplus in their balance-of-payments."[2] Williamson says, "If the proposal were to be implemented, it would be important to maintain (or possibly even strengthen) the right of the International Monetary Fund to veto par changes that it enjoys under Article IV, Section 5, of its Charter. Without this, there might be some danger of a revival of competitive depreciation."[3] Exchange rate adjustments which are to take place only after the rate has become obviously misaligned, however, will doubtlessly be fully anticipated by the market. Meade suggests that, as compensation for this inducement to shift assets among currencies, short-term interest rates should be adjusted in the countries involved so as to create an interest disparity equal to the expected annual rate of exchange rate adjustment. Williamson, as Goldstein notes, goes further and acknowledges that medium and long-term security yields must also change to offset

[1] See J. E. Meade, "The International Monetary Mechanism," *The Three Banks Review*, September 1964, reprinted in M. G. Mueller (ed.), *Readings in Macroeconomics* (New York: Holt, Rinehart and Winston, 1966), pp. 386-398 and also "Exchange Rate Flexibility," *International Payments Problems*, A Symposium Sponsored by the American Enterprise Institute, Washington, D. C., September 23-24, 1965. John H. Williamson's views are expressed in *The Crawling Peg*, Princeton University, Essays in International Finance, No. 50, December 1965.

[2] "Exchange Rate Flexibility," *op. cit.*, p. 42.

[3] *Op cit.*, p. 4.

gains the exchange market offers if investors are to be induced to refrain from intercurrency transactions. But while the exchange rate is to be permitted to reflect future price relationships only gradually, the securities markets are free to reflect them promptly. If, for example, it is anticipated that country D's exchange rate is to be depreciated by 6 percent at a rate of 2 percent per annum, investors must expect bond prices in the depreciating country promptly to drop almost to 94 percent of the value of comparable foreign bonds, and to regain their value only over a three-year period. This will allow the bonds to yield the 2 percent premium necessary to offset the 2 percent annual currency depreciation. But an expectation of rapid shifts in capital values of this magnitude will doubtlessly inspire substantial international capital transactions. The approach of Meade and Williamson, in which the adjustment of the exchange rate is delayed by design and then compensated by monetary policy, shifts the focus of speculative international capital transfers from the market for foreign exchange to the market for securities, rather than allaying it. It is essential to minimize the lags in adjustment if speculation is to be curbed.

Goldstein has assumed that one of the "main aims" of my proposal is to "free monetary policy for domestic objectives." In fact, what I said in the paper on which he comments was this:

> The view that interest levels should be manipulated solely or primarily with a view to the intensification or dampening of domestic spending, leaving the international exchange rate and the current international accounts to adapt to resulting international capital flows, lays aside the national welfare implications of foreign investment. In fact, interest rate levels should be oriented toward achieving a desirable net international flow of capital as well as a desirable level of home spending.[4]

I am of the view that the foreign exchange rate first and foremost, although not necessarily exclusively, is a policy variable to be employed to influence the current international accounts toward that net balance which accommodates the desired amount of international lending and giving. The task of the interest rate is first and foremost to cause the desired amount of international lending to materialize. This leaves to the congeries of activities subsumed under "fiscal policy" the prime responsibility for insuring high levels of domestic economic activity and stable prices. I am not as pessimistic as Goldstein about the ability of fiscal policy, with occasional support from monetary and other policy variables, to do this job.

In a regime of freely flexible exchange rates, speculation's effect is to modify the exchange rates rather than to shift monetary reserves among countries. It is a valid criticism of such a regime that speculation will lead to some movements of the rates that are spurious in the sense of being transient and supported only by speculatively motivated levels of foreign exchange demand or supply. Data from which expectations can be formed and which can lead to foreign exchange speculation are of two kinds. The level of the exchange rate and certain facts leading to an estimate of the level of an equilibrium rate can be observed; a comparison of such levels may then lead to expectations of a rate change. Otherwise, market participants may observe changes in the rate, and particularly rates of change (and perhaps higher order derivatives), and use these as indicators of the probability of further change. The present exchange rate system is faulty because it invites speculation based on comparative static

[4] "Moderated Exchange Rate Variability," *The National Banking Review*, 3, December 1965, p. 160. A few aspects of the national welfare implications of foreign investment are discussed in my article, "International Investment and the National Interest," *Southern Economic Journal*, XXVII, July 1960, pp. 11-17.

observations, and rewards successful prediction of a depreciation without penalizing error. Freely fluctuating rates are open to criticism because rate movements induced by rapid change are likely to be in excess of those necessary to bring about resource allocation adjustments, and because recognition of this fault reduces confidence that any current exchange rate is a long-run rate suitable as a planning directive. In view of the fact that under a regime of freely fluctuating rates sudden short-term capital movements are apt to meet an inelastic short-term response from the current account and hence cause a rapid short-term change in the exchange rate, it is unlikely that even in this regime monetary policy would be implemented without concern for its international implications. From my point of view, this is not an undesirable matter, but from Goldstein's perspective it doubtlessly is.

It may be contended by advocates of freely fluctuating rates that when a moderated rate remains within its support limits it has only the advantages that a freely fluctuating rate has, and that it has disadvantages of its own when it presses persistently against its support level. Such a criticism, however, overlooks two very appealing features of the proposal. One is that the limits on the band of short-term flexibility of the rate provide desirable assurance against precipitate changes in the rate. This makes it unlikely that speculative activity could ever pull the rate away from a rate which equilibrates nonspeculative forces. The other is that the ability of the market gradually to move the parity rate insures that the exchange rate will be able to contribute to the process of adjusting to secular changes in international markets.

The moderated exchange rate variability proposal is admittedly a compromise. The averaging formula I have suggested is not sacrosanct. A rule for the exchange rate which will provide for some automatic and sensitive responses to market pressures, while insuring against rapid and large rate changes, is, I believe, better than the discretionary "crawling peg," and eminently better than the existing structure of rigid but adjustable pegs. I believe it also has significant advantages over a system in which exchange rates are entirely free.

Current Legal and Regulatory Developments

I. *Lending Limits*

The Comptroller recently ruled on whether a national bank is subject to the 10 percent limitation of 12 U.S.C. 84 in making loans secured by the collateral of tax-exempt municipal bonds.

It was held that the limitations contained in 12 U.S.C. 84 do not apply to loans which are collateralized by "public securities" as that term is defined in 12 CFR 1.3(c). This ruling represents an extension of the present exception from the lending limit for loans secured by U. S. Government obligations and by obligations unconditionally guaranteed by agencies of the U. S. Government. Public securities as defined in 12 CFR 1.3(c) include obligations of the United States, general obligations of any state of the United States or of any political subdivision thereof and certain other obligations listed in paragraph 7 of 12 U.S.C. 24. This section of The United States Code permits a national bank to purchase for its own account without limitation, the general obligations of both the Federal government and state governments and political subdivisions thereof. No greater risk to the bank is involved in holding such securities, not for its own account, but as collateral for the obligations of a borrower.

The Comptroller has ruled that notes of a country bank's customer, discounted by a country bank to its city correspondent "with recourse," should be included as obligations of the country bank customer to that country bank and should be aggregated with the direct obligations owing to the bank from the customer in applying the limitations of 12 U.S.C. 84. The ruling noted that the risk exposure of the country bank with respect to notes which it has endorsed "with recourse" is not changed by reason of the sale of the notes.

It was also noted that paragraph 7000 of the *Comptroller's Manual* provides that the amount of the obligations, endorsed by a bank and sold for its own account, should be reflected as a liability on its records and in the reports of condition of the bank. The paragraph also stated that such liabilities of the country bank should be included in computing its aggregate indebtedness under 12 U.S.C. 82.

In another ruling the Comptroller held that, when a national bank lends to a government contractor on the security of an assignment of the amounts due and to become due the contractor under a contract with an agency of the United States, the obligation of the contractor is subject to the limitations of 12 U.S.C. 84 until the United States becomes obligated to make payment under the contract.

The Assignment of Claims Act[1] was enacted to facilitate the borrowing of

[1] 31 U.S.C. 203, 41 U.S.C. 15.

government contractors from banks and other financial institutions. The Act provides safeguards that enable the assignee-lender to determine more readily when the United States is obligated to make payment on a contract. These safeguards also protect the assignee from other liabilities of the assignor to the United States.

The ruling also held that as a bank becomes satisfied through government inspection reports, transportation receipts and other evidence that a contractor has complied with the terms of his contract, the obligation of the contractor, subject to 12 U.S.C. 84, may be reduced by the amounts which thus have become due from the United States.

The applicability of exception 6 of 12 U.S.C. 84 to loans secured by warehouse receipts on grain stored in the borrower's bonded warehouse was the subject of a recent ruling.

Warehouse receipts issued by a borrower-owner, that is a grain elevator or warehouse company, duly bonded and licensed and inspected regularly by state or Federal authorities, may be considered eligible collateral under exception 6 only when the receipts are registered with an independent registrar whose consent is required before the commodities covered may be withdrawn from the warehouse. However, where there are no such independent registrars, it may be feasible to comply with exception 6 by means of a pledge arrangement.[2] The requirements of exception 6 may be satisfied by a pledge of eligible commodities to the lending bank or its agent, even though the pledged commodities remain on the borrower's premises. If an agent of the bank, acting on its behalf, actually has exclusive possession and control of the pledged property, under an arrangement which is valid under state law and which gives the bank power to transfer title and possession, the bank as pledgee would have protection substantially equal to that provided by shipping documents or warehouse receipts. Under such a pledge arrangement, the lending limit applicable to loans made under exception 6 would be available to the lending bank.

The Comptroller has also ruled on the application of exception 13 of 12 U.S.C. 84 to a bank's purchase from aircraft manufacturers of participations in installment loans made to foreign commercial air carriers. In this case, each loan, in which the aircraft manufacturer participated, was originated by the Export-Import Bank for the purpose of financing an air carrier's purchase of aircraft and other equipment from the manufacturer. The participation of the manufacturer sold to the bank carried the manufacturer's unconditional guaranty (in some instances, for less than the face amount of the participation). The ruling considered a commercial air carrier to be a consumer for the purposes of exception 13. Accordingly, the installment paper of such a consumer, which evidences an obligation to pay for equipment purchased for use in business and not for resale or for fabrication into a product for resale, constituted installment consumer paper within the meaning of exception 13.

The opinion also noted that, where a bank relies primarily on the maker of installment consumer paper (in this case, the air carrier) for its repayment, the only lending limit applicable is the 10 percent limitation with respect to obligations of the maker. Under these circumstances, the manufacturer's guaranty obligation is not subject to any lending limit.[3]

The Comptroller has illustrated the application of Paragraph 1100(c) of the *Comptroller's Manual* which permits a

[2] See paragraph 1560(3) of the *Comptroller's Manual*.

[3] See paragraph 1630(e)(2) of the *Comptroller's Manual* which concerns the certification requirements of exception 13.

bank's reserve for bad debts to be utilized in computing its legal lending limits under 12 U.S.C. 84.

A national bank, in determining its surplus fund for purposes of 12 U.S.C. 84, may include its bad debt reserve, less the amount of tax which would become payable with respect to the tax-free portion of the reserve if that portion were transferred from the reserve. For example, assume a national bank has a bad debt reserve of $100,000 and the bank has claimed deductions covering $60,000 of that reserve. Since the bank has not claimed any deductions with respect to the remaining $40,000, this amount has previously been taxed to the bank. Therefore, the bank is free to use the $40,000 as it sees fit without tax consequences, such as retaining it in the bad debt reserve or transferring it to another account. Accordingly, $40,000 is includable in the bank's surplus fund. With respect to the $60,000 portion of the reserve which has been added to the reserve without payment of tax thereon, and assuming a 48 percent effective corporate tax rate for the bank, if the $60,000 were transferred from the reserve the bank would pay a tax of $28,800 thereon. The remaining $31,200 could then be included in its surplus fund. Thus, of the $100,000 bad debt reserve, $71,200 ($100,000 less $28,800) may be included in the bank's surplus fund for the purpose of computing lending limits.[4]

Rev. Rul. 65-92, C.B. 1965-1, 112, presents a revised method for computing deductions allowable for annual additions to reserves for bad debts, based on the dollar amount of a bank's reserve on December 31, 1964.

II. *Investment Securities*

In the period June 1 through August 31, 1966, the Comptroller has ruled that the following securities are eligible for purchase, dealing in, underwriting and unlimited holding by national banks:

(1) Alaska State Housing Authority Bonds (12 CFR 1.173);

(2) Orange County Civic Center Revenue Bonds (not published in CFR);

(3) University of Texas Permanent University Fund Bonds (not published in CFR);

(4) Constitutional Tax Bonds of the Colleges of the State of Texas (not published in CFR).

III. *Corporate Practices*

A. Change of Control Reports

The Comptroller has ruled that the sale of 80 percent of the stock of a corporation, owning over 90 percent of the stock of a national bank, results in a change of "control" over the bank under 12 CFR 15.2. For purposes of this Regulation, "control" is defined as the possession, directly or indirectly, of the power to direct or cause the direction of the management and policies of the bank.[5]

B. Qualified Stock Option Plans

Inquiries have been received concerning stock options granted by national banks pursuant to plans designed to qualify under the provisions of the Internal Revenue Code of 1954, at option prices higher than market prices currently prevailing for the bank's stock. The Comptroller has ruled that where the plan under which such stock options have been granted generally conforms to the Comptroller's sample stock option plan and the plan permits options for a greater aggregate number of the bank's shares than are covered by previously granted options, these additional stock options for the remaining shares may be granted

[4] This ruling clarifies the one appearing in *The National Banking Review*, 3, March 1966, pp. 407-408.

[5] See 12 U.S.C. 1817 (j)(1).

under the plan at an exercise price equivalent to the market price of the stock prevailing when the new options are granted. The additional options need not require an employee who also holds an earlier option at a higher option price to exercise the earlier option first, although the absence of such requirement would preclude special tax treatment of the additional option where his earlier option qualifies for special tax treatment.

IV. *Check Guarantee Plans*

The Comptroller has reaffirmed the power and authority of a national bank to carry on a check guarantee card plan.[6]

These plans are designed to make the checks of customers of a bank more readily acceptable for cash and purchases at established businesses. Customers of the bank are thereby encouraged to use lines of credit available to them at their bank. These improved services are expected to enable banks to retain present customers in the face of increasing competition for demand deposits and consumer loans and to attract new checking account and borrowing customers.

Most plans are set up along the following lines: Selected credit-worthy customers enter into a written contract with the bank governing the rights and liabilities of the parties under the plan and receive a check guarantee card which commits the bank to pay a check drawn by the customer, in an amount of $100 or less, for example, payable to an established business, provided certain procedural conditions are complied with. The bank's commitment is accepted by the payee of the check when he complies with its terms.

The plans involve payment of checks or drafts either out of funds on deposit or funds which the bank has agreed to lend and which its customer has agreed to repay. Banks also issue a letter of credit in card form. The plans thus represent an exercise by the banks of the specific powers to receive deposits, pay checks or drafts and to lend money on personal security. They are also indicative of the general power to conduct the business of banking through a modern adaptation of the letter of credit.

National banks are authorized to carry on the business of banking and to exercise all such incidental powers as shall be necessary to do so. They are specifically authorized, among other things, to discount and negotiate drafts and other evidences of debt, to receive deposits, and to lend money on personal security.[7] It is clear from the form of the statute and from its legislative history that the term "business of banking" has not been fully defined. On the contrary, it has been left free to change in the traditional manner of the common law and the law merchant and in accordance with customary banking practices to meet the needs of the community.

At the present time, the business community is using new techniques to extend credit and demonstrate credit-worthiness. Credit cards have been issued by merchants, oil companies, hotels, transportation companies, credit card companies and finally by banks. Commercial letters of credit and travelers letters of credit have long been a part of the banking business. Travelers checks, now issued by a travel agency and several national banks, were designed some time ago to meet the needs of travelers for a credit instrument which would avoid the risks of carrying cash. The instrument issued only by well-known financial institutions is a special variation of the ordinary bank check.

Another technique is the check guar-

[6] A previous ruling relating to plans of this nature appeared in *The National Banking Review*, 2, June 1965, pp. 576-577.

[7] See 12 U.S.C. 21, 24.

antee plans which avoid the purchase and billing of accounts receivable involved in credit card plans. These check guarantee plans let the customer pay his own bills with his own check thereby keeping these problems out of the bank. A number of British banks have recently announced the adoption of a check guarantee plan similar, in many respects, to the aforementioned plans.

There is a risk that a customer may exceed his credit line and cause the bank to become obligated to pay more than the bank had considered lending that customer. The probability of loss from this risk can be evaluated by the bank as easily as the more usual risk that a customer will be unable to repay in accordance with the terms of his contract. Moreover, the overdraft risk is likely to be the lesser risk because it would come to the bank's attention immediately. Thus, the bank would be able to take prompt action to minimize losses. It should be noted, however, that the manner in which credit risks of this nature are evaluated and the means used to minimize them are questions of prudent banking and not of corporate authority.

In another ruling, it was held that under its corporate powers a national bank may issue privilege cards to employees of a corporate customer. The cards would enable the employees to cash payroll checks up to an amount of, say, $250 at various supermarkets and retail stores which are also customers of the subject bank. The privilege card to be issued to the employees of the corporate customer would bear the corporate title of the customer, the employee's name, and the corporate account number. Under the plan, the bank would, in essence, act as a guarantor of the payroll checks drawn by its corporate customer and cashed by employees at participating stores. A national bank has a sufficient interest in facilitating the cashing of checks drawn on it by its customers so that it may enter into the agreements contemplated by this plan.[8]

V. *Construction Loan Inspection Fees*

The Comptroller has ruled that, in the absence of contrary state law, a national bank may receive from a borrower an inspection fee on a construction loan in addition to the maximum lawful rate of interest. The ruling noted that a charge for services rendered by a lender in addition to the maximum lawful rate of interest on money loaned, does not of itself, render the contract usurious. This principle is reflected in paragraph 7315 of the *Comptroller's Manual* which states that, subject to contrary or limiting state statute, national banks are permitted to receive reasonable fees or compensation for credit reports or investigations with respect to a customer's credit in addition to the highest rate of interest permitted under state law. Construction loans often impose unusual burdens on the lending bank requiring the professional assistance of engineers and architects to inspect the underlying security for the loan and to insure that the construction is proceeding in accordance with approved specifications.

VI. *Absorption of Exchange Charges*

The Comptroller has ruled that a national bank may absorb exchange charges for its customers in the same manner and in the same amounts as its competitor nonmember banks. The Comptroller stated that this ruling was made with great reluctance because of his long-standing position that the practice of charging exchange should be eliminated completely. As a result of these practices,

[8] Paragraph 7010 of the *Comptroller's Manual* generally provides that a national bank may not lend its credit or become a guarantor on an obligation or bind itself as surety to indemnify others in the event of loss, unless it has a substantial interest in the performance of the transaction involved.

national banks, as compulsory members of the Federal Reserve System, have been placed at serious competitive disadvantages because of their inability, under present Federal Reserve regulations, to absorb these charges in the same manner as competing nonmember institutions. Because nonmember banks are permitted to absorb exchange, national banks have a right, if not a duty, to protect their accounts from discriminatory competition.

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Office of the Comptroller
of the Currency

Selected Statistical Data

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TABLE 1

Number of national banks and banking offices, by states, June 30, 1966

	National banks			Number of branches	Number of offices
	Total	Unit	With branches		
United States	4,811	3,439	1,372	9,074	13,885
Alabama	86	56	30	128	214
Alaska	5	0	5	40	45
Arizona	4	1	3	178	182
Arkansas	65	37	28	61	126
California	93	48	45	1,766	1,859
Colorado	117	117	0	0	117
Connecticut	30	12	18	172	202
Delaware	5	3	2	4	9
District of Columbia	8	0	8	48	56
Florida	198	198	0	0	198
Georgia	58	33	25	123	181
Hawaii	2	0	2	41	43
Idaho	9	3	6	99	108
Illinois	416	416	0	0	416
Indiana	122	58	64	259	381
Iowa	102	68	34	37	139
Kansas	170	146	24	24	194
Kentucky	81	40	41	120	201
Louisiana	47	15	32	138	185
Maine	21	6	15	71	92
Maryland	49	20	29	191	240
Massachusetts	90	26	64	341	431
Michigan	98	38	60	436	534
Minnesota	194	192	2	6	200
Mississippi	35	8	27	87	122
Missouri	98	80	18	18	116
Montana	49	49	0	0	49
Nebraska	126	109	17	17	143
Nevada	3	1	2	34	37
New Hampshire	51	33	18	23	74
New Jersey	148	47	101	438	586
New Mexico	34	15	19	53	87
New York	195	101	94	973	1,168
North Carolina	28	8	20	266	294
North Dakota	42	36	6	6	48
Ohio	226	95	131	540	766
Oklahoma	220	194	26	26	246
Oregon	13	8	5	214	227
Pennsylvania	366	215	151	811	1,177
Rhode Island	4	0	4	53	57
South Carolina	26	5	21	178	204
South Dakota	34	27	7	38	72
Tennessee	77	24	53	214	291
Texas	547*	547	0	0	547
Utah	13	9	4	55	68
Vermont	27	15	12	31	58
Virginia	118*	47	71	348	466
Washington	30	15	15	342	372
West Virginia	79	79	0	0	79
Wisconsin	111	99	12	24	135
Wyoming	40	40	0	0	40
Virgin Islands	1	0	1	2	3
D.C.-all†	15	1	14	85	100

* Includes one bank organized under Section II of the Federal Deposit Insurance Act.

† Includes national and nonnational banks in the District of Columbia, all of which are supervised by the Comptroller of the Currency.

TABLE 2

Status of applications for national bank charters, and charters issued; April 1-June 30, 1966

Applications carried over from March 31, 1966	31
2 Conversions	
29 Primary	
Applications received April 1-June 30, 1966	16
3 Conversions	
13 Primary	
	47
Applications approved April 1-June 30, 1966	5
2 Conversions	
3 Primary	
Applications rejected April 1-June 30, 1966	18
0 Conversions	
18 Primary	
Applications abandoned April 1-June 30, 1966	0
0 Conversions	
0 Primary	
Applications pending as of June 30, 1966	24
3 Conversions	
21 Primary	
	47
* * *	
National banks chartered April 1-June 30, 1966	15
6 Conversions	
9 Primary	

TABLE 3

Status of applications for national bank charters*, and charters issued*, by states, April 1-June 30, 1966

	Received †	Approved	Rejected	Abandoned	Pending June 30, 1966	Charters issued
United States	42	3	18	0	21	9
Alabama	1	0	1	0	0	0
Alaska	0	0	0	0	0	0
Arizona	0	0	0	0	0	0
Arkansas	0	0	0	0	0	0
California	0	0	0	0	0	1
Colorado	0	0	0	0	0	1
Connecticut	2	0	0	0	2	0
Delaware	0	0	0	0	0	0
District of Columbia	0	0	0	0	0	0
Florida	6	1	4	0	1	1
Georgia	3	0	2	0	1	0
Hawaii	0	0	0	0	0	0
Idaho	0	0	0	0	0	0
Illinois	1	0	0	0	1	0
Indiana	0	0	0	0	0	0
Iowa	1	0	1	0	0	0
Kansas	1	0	0	0	1	0
Kentucky	0	0	0	0	0	0
Louisiana	2	1	0	0	1	0
Maine	0	0	0	0	0	0
Maryland	1	0	0	0	1	0
Massachusetts	0	0	0	0	0	0
Michigan	2	0	1	0	1	0
Minnesota	1	0	0	0	1	0
Mississippi	1	0	1	0	0	0
Missouri	0	0	0	0	0	2
Montana	0	0	0	0	0	0
Nebraska	1	0	0	0	1	0
Nevada	0	0	0	0	0	0
New Hampshire	0	0	0	0	0	0
New Jersey	0	0	0	0	0	0
New Mexico	1	0	1	0	0	0
New York	2	0	1	0	1	0
North Carolina	1	0	1	0	0	0
North Dakota	0	0	0	0	0	0
Ohio	0	0	0	0	0	1
Oklahoma	0	0	0	0	0	0
Oregon	1	0	1	0	0	1
Pennsylvania	0	0	0	0	0	0
Rhode Island	0	0	0	0	0	0
South Carolina	0	0	0	0	0	0
South Dakota	0	0	0	0	0	0
Tennessee	0	0	0	0	0	1
Texas	8	0	3	0	5	1
Utah	0	0	0	0	0	0
Vermont	0	0	0	0	0	0
Virginia	0	0	0	0	0	0
Washington	0	0	0	0	0	0
West Virginia	0	0	0	0	0	0
Wisconsin	4	1	0	0	3	0
Wyoming	0	0	0	0	0	0
Puerto Rico	1	0	0	0	1	0
Guam	1	0	1	0	0	0

* Excludes conversions.

† Includes applications pending as of March 31, 1966.

TABLE 4

Status of applications for conversion to national bank charters, and charters issued, by states, April 1-June 30, 1966

	Received *	Approved	Rejected	Abandoned	Pending June 30, 1966	Charters issued
United States	5	2	0	0	3	6
Alabama	0	0	0	0	0	0
Alaska	0	0	0	0	0	0
Arizona	0	0	0	0	0	0
Arkansas	0	0	0	0	0	0
California	0	0	0	0	0	0
Colorado	0	0	0	0	0	0
Connecticut	0	0	0	0	0	1
Delaware	0	0	0	0	0	0
District of Columbia	0	0	0	0	0	0
Florida	1	1	0	0	0	1
Georgia	0	0	0	0	0	0
Hawaii	0	0	0	0	0	0
Idaho	0	0	0	0	0	0
Illinois	1	0	0	0	1	3
Indiana	0	0	0	0	0	0
Iowa	1	0	0	0	1	0
Kansas	0	0	0	0	0	0
Kentucky	0	0	0	0	0	0
Louisiana	0	0	0	0	0	0
Maine	0	0	0	0	0	0
Maryland	0	0	0	0	0	0
Massachusetts	0	0	0	0	0	0
Michigan	0	0	0	0	0	0
Minnesota	0	0	0	0	0	0
Mississippi	0	0	0	0	0	0
Missouri	0	0	0	0	0	0
Montana	0	0	0	0	0	0
Nebraska	0	0	0	0	0	0
Nevada	0	0	0	0	0	0
New Hampshire	0	0	0	0	0	0
New Jersey	0	0	0	0	0	0
New Mexico	0	0	0	0	0	0
New York	0	0	0	0	0	0
North Carolina	0	0	0	0	0	0
North Dakota	0	0	0	0	0	0
Ohio	1	0	0	0	1	0
Oklahoma	0	0	0	0	0	0
Oregon	0	0	0	0	0	0
Pennsylvania	0	0	0	0	0	0
Rhode Island	0	0	0	0	0	0
South Carolina	1	1	0	0	0	1
South Dakota	0	0	0	0	0	0
Tennessee	0	0	0	0	0	0
Texas	0	0	0	0	0	0
Utah	0	0	0	0	0	0
Vermont	0	0	0	0	0	0
Virginia	0	0	0	0	0	0
Washington	0	0	0	0	0	0
West Virginia	0	0	0	0	0	0
Wisconsin	0	0	0	0	0	0
Wyoming	0	0	0	0	0	0

* Includes applications pending as of March 31, 1966.

TABLE 5

Status of de novo branch applications of national banks, by states, April 1-June 30, 1966

	Received *	Approved	Rejected	Abandoned	Pending June 30, 1966
United States	515	162	30	11	312
Alabama	15	10	0	0	5
Alaska	0	0	0	0	0
Arizona	4	4	0	0	0
Arkansas	3	1	0	0	2
California	75	26	14	2	33
Colorado	0	0	0	0	0
Connecticut	13	3	0	0	10
Delaware	0	0	0	0	0
District of Columbia	2	0	0	0	2
Florida	0	0	0	0	0
Georgia	7	3	0	0	4
Hawaii	0	0	0	0	0
Idaho	1	0	0	0	1
Illinois	0	0	0	0	0
Indiana	6	3	1	0	2
Iowa	3	2	0	0	1
Kansas	2	1	0	1	0
Kentucky	5	1	0	0	4
Louisiana	5	4	0	0	1
Maine	2	1	1	0	0
Maryland	19	6	2	0	11
Massachusetts	15	5	0	0	10
Michigan	31	6	2	3	20
Minnesota	0	0	0	0	0
Mississippi	15	9	0	2	4
Missouri	1	0	0	0	1
Montana	0	0	0	0	0
Nebraska	2	2	0	0	0
Nevada	1	0	0	0	1
New Hampshire	11	1	0	0	10
New Jersey	21	9	1	1	10
New Mexico	3	0	0	0	3
New York	60	13	1	0	46
North Carolina	15	7	0	0	8
North Dakota	3	1	0	0	2
Ohio	21	10	2	1	8
Oklahoma	0	0	0	0	0
Oregon	3	2	0	0	1
Pennsylvania	32	11	2	0	19
Rhode Island	1	1	0	0	0
South Carolina	12	4	1	0	7
South Dakota	0	0	0	0	0
Tennessee	8	4	0	0	4
Texas	0	0	0	0	0
Utah	3	0	0	0	3
Vermont	4	1	0	0	3
Virginia	14	4	3	1	6
Washington	16	6	0	0	10
West Virginia	0	0	0	0	0
Wisconsin	60	0	0	0	60
Wyoming	0	0	0	0	0
Virgin Islands	1	1	0	0	0
D.C.-all†	6	1	0	0	5

* Includes applications pending as of March 31, 1966.

† Includes national and nonnational banks in the District of Columbia, all of which are supervised by the Comptroller of the Currency.

TABLE 6

Branches of national banks: in operation March 31, 1966; opened, discontinued, or consolidated, April 1-June 30, 1966; and branches in operation June 30, 1966

	Branches in operation Mar. 31, 1966	De novo branches opened for business Apr. 1–June 30, 1966	Branches acquired through merger or conversion Apr. 1–June 30, 1966	Existing branches discontinued or consolidated Apr. 1–June 30, 1966	Branches in operation June 30, 1966
United States	8,938 *	136	16	16	9,074
Alabama	127	0	1	0	128
Alaska	40	0	0	0	40
Arizona	174	4	0	0	178
Arkansas	58	3	0	0	61
California	1,748	19	0	1	1,766
Colorado	0	0	0	0	0
Connecticut	169	3	0	0	172
Delaware	4	0	0	0	4
District of Columbia	47	1	0	0	48
Florida	0	0	0	0	0
Georgia	120	3	0	0	123
Hawaii	40	0	1	0	41
Idaho	95	4	0	0	99
Illinois	0	0	0	0	0
Indiana	256	3	0	0	259
Iowa	33	4	0	0	37
Kansas	23	1	0	0	24
Kentucy	121	0	0	1	120
Louisiana	135	3	0	0	138
Maine	69	2	0	0	71
Maryland	189	3	0	1	191
Massachusetts	325	14	2	0	341
Michigan	426	9	1	0	436
Minnesota	6	0	0	0	6
Mississippi	84 *	3	0	0	87
Missouri	18	0	0	0	18
Montana	0	0	0	0	0
Nebraska	17	0	0	0	17
Nevada	33	1	0	0	34
New Hampshire	23	0	0	0	23
New Jersey	432	4	2	0	438
New Mexico	53	0	0	0	53
New York	968 *	14	1	10	973
North Carolina	263	2	1	0	266
North Dakota	5	1	0	0	6
Ohio	531	8	1	0	540
Oklahoma	27	0	0	1	26
Oregon	212	2	0	0	214
Pennsylvania	797	12	3	1	811
Rhode Island	53	0	0	0	53
South Carolina	176	2	0	0	178
South Dakota	38	0	0	0	38
Tennessee	208	6	0	0	214
Texas	0	0	0	0	0
Utah	55	0	0	0	55
Vermont	32	0	0	1	31
Virginia	341	4	3	0	348
Washington	341	1	0	0	342
West Virginia	0	0	0	0	0
Wisconsin	24	0	0	0	24
Wyoming	0	0	0	0	0
Virgin Islands	2	0	0	0	2
DC.-all †	83	2	0	0	85

* Revised.

† Includes national and nonnational banks in the District of Columbia, all of which are supervised by the Comptroller of the Currency.

TABLE 7

De novo branches of national banks opened for business, by community size and by size of bank, April-June 30, 1966

Category	Branches
In cities with population:	
Less than 5,000	36
5,000 to 24,999	43
25,000 to 49,999	16
50,000 to 99,999	10
100,000 to 249,999	12
250,000 to 499,999	7
500,000 to 1,000,000	5
Over 1,000,000	7
TOTAL	136
By banks with total resources: (in millions of dollars)	
Less than $ 10.0	28
10.0 to 24.9	22
25.0 to 49.9	14
50.0 to 99.9	16
100.0 to 999.9	33
Over 1,000	23
TOTAL	136

TABLE 8

Mergers,* April 1-June 30, 1966

Applications carried over from March 31, 1966	22
Applications received April 1-June 30, 1966	22
Disposition of applications: April 1-June 30, 1966	
Approved	21
Disapproved	0
Withdrawn	4
Pending June 30, 1966	19
Transactions completed—Total	20
Mergers	16
Consolidations	2
Purchase of assets	2

The aggregate totals of capital stock and capital accounts for certificates issued are as follows:

	Charter or purchasing bank	Merging consol., selling bank	Combined
Capital stock	$ 60,851,975	$5,279,380	$ 67,413,477
Capital accounts	233,582,307	17,874,302	253,345,110

* Includes mergers, consolidations and purchases and sale transactions where the resulting bank is a national bank.

BOOK REVIEWS

Determinants and Effects of Changes in the Stock of Money, 1875-1960. By Phillip Cagan. New York: Columbia University Press for National Bureau of Economic Research, 1965. Pp. xxi + 380. $10.

Phillip Cagan's *Determinants and Effects of Changes in the Stock of Money, 1875-1960* is the second of three volumes that report the findings of the National Bureau of Economic Research (NBER) monetary project. The first, *A Monetary History of the United States* by Milton Friedman and Anna Jacobson Schwartz, employs a broadened version of the quantity theory of money, including commercial bank time deposits in the money stock, to trade the relationship between money and economic activity. Further analysis using this approach is forthcoming in *Trends and Cycles in the Stock of Money in the United States, 1867-1960,* now in preparation.[1]

Cagan's work is more narrowly conceived than was the *Monetary History.* To a large extent, it is intended to provide statistical and interpretive underpinning for the approaches adopted, and the conclusions reported, in the companion studies. For this reason, Cagan's study must be evaluated partly in relation to the whole NBER project.

This fact is underscored by the author's conformity to the general conclusions and the controversial innovations associated with Friedman and Schwartz, and by the emphasis Cagan places on his own findings about the causal relationships between money and business and business and money. His findings are designed to fit into the larger effort of which *Determinants* is a part.

Cagan accepts, and provides evidence to support the proposition that the historical covariation between the money stock and economic activity, both secular and cyclical, reflects causation, whether in one direction or mutual. Given this proposition, he is concerned with determining the directions of causation. Like Friedman and Schwartz, Cagan does not assign primary importance to the impact of monetary policy on observable credit market variables as the link between money and economic activity, although interest rates enter into his analysis at some points.

Cagan's money is the same as Friedman and Schwartz's money, that is, currency plus commercial bank demand and time deposits adjusted. We are told:

> The main reason for including also time deposits . . . in the new estimates is that they cannot be satisfactorily separated from demand deposits in the pre-1914 data and perhaps not meaningfully separated until the 1930's . . . and so, for purposes of comparability, were included in the later period.

The reader who is uneasy about the implications of this departure from the more orthodox definition of money, and about the resulting focus on money as a "temporary abode of purchasing power," rather than as a medium of exchange, will find little guidance in Cagan's discussion. He will do well to turn to the *Monetary History* for further (through not extensive) defense, and to the several reviews of it for criticism.

Finally, in his analysis of cyclical experience, Cagan fastens attention on the rate of change in the money stock, although his analysis of secular experience relates the level of the money stock to the level of prices and activity. Cagan correctly argues that his chosen focus need not affect the analysis of cyclical experience since the contributions of the determinants to the rate of change of the money series is related to business cycle stages (NBER specific and reference cycles) "without deciding whether changes in the level or the rate of change in economic activity was more important (page 277)." However, the relationship of rates of change in the money stock to stages of the reference cycle, while it facilitates a comparison of the timing of the rate of change of money to peaks and troughs in activity, does not permit detailed quantifica-

[1] For a preliminary report, see Milton Friedman, "Lags in the Effect of Monetary Policy," *Journal of Political Economy,* LXVIX, pp. 447-466, and J. M. Culbertson's critical appraisal of his article, pp. 467-477. See also Friedman's response to Culbertson in the *Journal of Political Economy,* LXVIII, pp. 617-621.

tion of the relationship in either dimensional context; that is, Cagan's reference cycle data do not include measures of either the level or the rate of change in business activity. Moreover, Cagan's later conclusions about causation rely on the assumption that cyclical changes in business are caused by variations in the rate of change of the money stock, rather than its level. This is, of course, the position that Friedman has taken and will, presumably, receive further defense in *Trends and Cycles.*

Cagan's *Determinants* does little to contribute to the dialogue between the Chicago School and its critics concerning definitions, methods, and hypotheses. Much, if not most of it, was apparently completed before this dialogue began. The book is, therefore, an integral part of the major research effort that is giving rise to the dialogue.

As such, it is an important contribution. In addition to its direct contribution to the larger NBER study, it is a storehouse of historical information, analysis, and carefully assembled data that will be useful to all students of United States monetary history. It is, also, a compendium of stimulating ideas for further research, demonstrating at several points that hypothesis-testing may entail more than running regressions, generally undermining the easy answers.

Notwithstanding these admirable qualities, I am not persuaded by the logic that underlies Cagan's principal conclusion—that money leads business over the cycle. His evidence is consistent with that hypothesis only given the view that cyclical fluctuations are due to variations in the rate of change of the money stock, and that the lag between cause and effect is substantial.

The stock of money (M), as defined by Cagan, is equal to currency held outside banks (C) plus bank deposits adjusted (D). Deposits, in their turn, are equal to reserves held by banks (R) divided by the ratio of reserves to deposits. High-powered money (H) is defined as bank reserves plus currency, so that:

$$M = \frac{H}{\frac{C}{M} + \frac{R}{D} - \frac{C}{M}\frac{R}{D}}$$

Having expressed the money stock in terms of its three "determinants," the quantity of high-powered money, the reserve ratios, and currency ratios, Cagan shows how changes in the money stock can be attributed to changes in each of the three determinants, and traces the historical path of the money series in these terms. The guiding consideration is the question of causation. Do fluctuations in economic activity explain changes in the determinants, and if so, through what channels?

Even though Cagan reports his findings in rich detail, they suffer badly in translation to summary. He concludes that long range growth of the money stock has reflected primarily the growth of the gold stock, and the growth of Federal Reserve credit since 1914. Generally, he concludes, these two sources cannot be attributed to a "demand pull" effect of economic activity. Of lesser importance over the entire period was the reduction in the reserve-deposit ratio of commercial banks, whose contribution was greatest between the last years of the nineteenth century and the onset of the Great Depression. This reduction in the reserve-deposit ratio of commercial banks was due mainly to a pronounced reduction of usable reserves (excess reserves plus ineligible vault cash) which is attributed to the assumption of responsibility, first by the Treasury, and then by the Federal Reserve, for maintaining stable money markets. Cagan's analysis of this trend entails a neat and enlightening separation of the effects of geographical shifts of deposits, shifts between demand and time deposits, changes in legal reserve requirements, and changes in the usable reserve ratio. The currency-money ratio, also, largely followed a downward long-term trend, at least until 1930. Cagan attributes this secular movement to the substitution of checking accounts for currency.

In short, Cagan finds little evidence to support the proposition that secular movements in the money stock result from changes in output or prices. He, therefore, concludes that the long-run relation of prices to the money stock reflects one-directional causation running from money to prices.

Over business cycles, the rate of growth of the money stock typically reaches its peak during the early phases of expansions, then declines at a diminishing rate, and reaches its trough at or after the reference cycle

peak. Cagan traces about half of the variation in the rate of growth of the money series to changes in the currency ratio, both before and after establishment of the Federal Reserve. The ratio of currency to the money stock shows a downward trend over most of the period. Typically, however, the reduction is greatest in the early phases of expansion, then rises relative to trend until well after the reference cycle peak.

The reserve ratio typically falls throughout expansions and rises in contractions, after removal of trend. The amplitude of fluctuation of this ratio was, however, considerably greater in the earlier years than in the later years of the period. The reduction of the usable reserve ratio that began well before World War I greatly narrowed potential cyclical movements in the reserve ratio. Cagan finds little evidence to support the view that the reserve ratio is sensitive to movements of short-term money market rates, although it does move with "business conditions," a movement Cagan attributes to business loan demand.[2]

The cyclical movements of high-powered money are traced both to gold and to nongold sources, in roughly equal measure, during the years prior to 1914. Movements of the trade balance exerted a countercyclical influence on the gold stock that was partly offset by the combined effects of changes in the balance in services, capital movements, and domestic gold production. After 1914, Treasury and Federal Reserve operations dominated the high-powered money series. Although Cagan makes several perceptive observations about the Federal Reserve's role, he concludes that "the variety of cyclical patterns (in Federal Reserve behavior) discourages generalizing about Federal Reserve actions as simply 'active' or 'passive,' responsive to the needs of trade or countercyclical."

For the business cycle, then, Cagan finds clear indications of causation running from business to money via the three determinants. He also finds that the relationships between business activity and the determinants show some variations over time that can be attributed to institutional change, and a substantial degree of independence among the determinants. But he does not find, even for the relevant subperiods, a closer association of these determinants to business activity than business activity bears to the money series itself. He, therefore, concludes that changing rates of monetary growth help to explain business fluctuations even though they are also explained by them.

The evidence is particularly clear for severe cycles. Often these cycles have been characterized by panics in their early stages, panics that cannot be explained by the pattern of business activity. In all cases, a severe decline in the rate of change of the money stock precedes the severe decline in business activity. For mild cycles, the evidence is less persuasive, but Cagan concludes that his analysis "provides some indirect evidence . . . that even moderate variations in the rate of change in the money stock" are important in explaining subsequent cyclical events. The evidence is that the relationship between monetary growth and business cycles has remained substantially unchanged even though the relationships between business activity and the determinants, and among the determinants themselves, have changed substantially. From this evidence, Cagan concludes that causation runs from money to business, as well as from business to money. This is a legitimate conclusion if it is established that the influence of money on business consistently lags relative to the influence of business on money.

For example (mine, not Cagan's), a close relationship between money and business activity might indicate that increased business activity, whatever its cause, gives rise to a contemporaneous increase in the demand for money that, in its turn, rapidly

[2] Cagan's conclusion is based on the lack of correlation between changes in the overall reserve ratio (rather than the usable reserve ratio) and changes in short-term money market rates. Although the usable reserve ratio would be more satisfactory as the independent variable, Cagan's estimates of usable reserves are available only for call report dates. In any event, one would expect more than one variable to be at work in the determination of reserve ratios, and Cagan's findings might be reversed by multivariate analysis.

brings forth the requisite increase in the money stock by raising interest rates (including rates on business loans) and thereby generating (1) an inflow of short-term capital from abroad or an increase in Federal Reserve credit, (2) a reduction of the currency/money ratio, or (3) a reduction of the reserve ratio. In this case, if institutional changes cause the interest elasticities of the proximate determinants to vary over time, the association between business activity and the money series will be closer than the association between business activity and any of the three proximate determinants. But it will not be possible, using Cagan's analytical framework, to determine whether causation runs from business to money or from money to business.

If, on the other hand, the influence of business on money is not direct, operating through the demand for money, but is the byproduct of a relation between business and one or more of the proximate determinants; then changing relations between business activity and the determinants will produce a changing relation between business activity and the money stock, unless causation also runs from the money stock to business. According to Cagan, failure to observe a change in the latter relationship, in the face of clear changes in the former ones, would indicate that changes in business activity are primarily the result of monetary changes, even though they may also be a cause of monetary changes. Given an appropriate lag structure, this mutual dependence could produce a self-generating cycle that, in the limit, is "purely monetary."

But such an inference depends on the assumption that the effect of business on money operates through independent relations of business and one or more of the determinants. If the business-money, money-business effects occur simultaneously (or within the same reference cycle stage), the determinants cannot be independent of one another except to the extent that the observed relationship between business activity and money is itself variable. For example, an observation that the level of the money supply and the level of business activity were highly correlated would not tell us which was cause and which was effect.

Cagan's inference depends on his assumption that business affects money with only a short lag (within the contemporaneous stage of the reference cycle) while money affects business with a substantial lag. Assuming that this is true, the problems posed by simultaneous determination do not arise.

Earlier work for Friedman and others has shown that the lag between money and business is long only if the rate of change in the money stock, rather than its level, is the moving actor over the cycle.

The credibility of Cagan's test depends on the credibility of the long-lag hypothesis. Presumably we will learn more about that when *Trends and Cycles* is published.

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The Valuation of Small-Bank Stocks. By James Van Horne and Raymond C. Helwig. East Lansing, Michigan: Bureau of Business and Economic Research, Graduate School of Business Administration, Michigan State University, 1966. Pp. viii + 60. $2.00.

Horne and Helwig's paper is an empirical study of the determination of the market price of small-bank stocks. Since published market-price data are unavailable, the authors resorted to a survey by questionaire of 118 Michigan banks having deposits of less than $10 million. In an effort to determine the factors influencing market price, the authors considered dividends, earnings, deposit growth, stability of earnings, financial ratios, and the number of stockholders. Most of these factors were found to be insignificant.

The major finding of this study is that dividend yield was the most important factor affecting the market price (relative to book value), while earnings per share was of only minor importance. This latter result is somewhat surprising. The authors test a normal or average earnings hypothesis which states that, *ceteris paribus*, stocks having the highest average earnings over a preceding period will tend to have the highest price now. They relate the aver-

age annual earnings per share for the period 1960-1964 to the ratio of the market price to book value for 1964 and find a weak association. Of course, alternative earnings hypotheses could have been tested, for example, it might be postulated that the trend in earnings indicates expectations as to future earning levels and hence determines market prices. Such a mechanism would not be revealed by the average method employed in the study. It is not clear whether such a test would have been fruitful since the authors explain: "Because no trends in earnings performance were evident for the great majority of banks in the sample over the 1960-64 period, the rate of increase or decrease in earnings was not employed as a variable (page 10)." They also point out that "For many of the banks in the sample, there was considerable fluctuation in earnings over the 1960-64 period (page 9)." It is not obvious to the reviewer how the evidence of trend can be discerned from five observations of a considerably fluctuating series. Perhaps more data are necessary for the test of the earnings trend hypothesis.

Although dividend yield was found to be an important determinant, the median 1964 dividend yield of the small-bank stocks was only 3.2 percent. Also, the median price-earnings ratio was 10.9. Thus, the dividend payout of small banks was found to be lower than that of large banks whose stocks trade in more active markets and, have higher price-earnings ratios.

The study, although far from a complete investigation into the determinants of the market price of small-bank stocks, is a suggestive and an important step into this little-known area.

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Consumer Credit Finance Charges—Rate Information and Quotation. By William P. Mors. New York, New York: National Bureau of Economic Research. Pp. 133. $5.00.

This book is the twelfth in a series of studies in consumer installment financing published by the National Bureau of Economic Research. It is part of the studies designed to remedy gaps in the knowledge of finance charges.

Consumer Credit focuses on the problem of providing installment credit information to consumers in a knowledgeable and understandable manner. The book presents the procedures and methodologies which firms offering consumer installment credit employ in the computation of finance charges and in the quotation of rates and charges to consumers. It describes the procedures and complexities in standardizing the various types of consumer financing and evaluates the uses of installment charge information available to consumers. The book also reviews some existing empirical data on the consumer's cognizance of finance charges, not only in dollar costs, but also as computational rates and effective annual rates of interest.

Professor Mors describes aptly the three general methods used by finance agencies and retailers in computing finance charges: percent per month method, discount method, and add-on method. He traces, in an interesting and accurate manner, the historical development of all types of installment cash lending and retail installment financing. His coverage of state legislation regarding finance charge disclosure for these loans is excellent, although he ignores recent federal legislative attempts.

In the section on uses of finance charge information, Professor Mors concludes that a number of people use installment buying as a budgetary device. They lack the necessary fortitude either to save ahead for the cash purchase of consumer durables of high unit value or to use liquid assets, for fear that they will be unable to replace them. I find no cause for disagreement with his analysis, but a short section on the consumer economics of the values of not using installment credit would be a valuable addition to this chapter.

The author points out that, although consumers are given a wide variety of useful information, the variety itself precludes any easy comparison of the many credit alternatives. He summarizes the merits and limitations of the relevant types of finance charge information as follows:

a. *Dollar charge and monthly payment*

information have definite advantages for comparisons among credit transactions with the same maturity, especially for goods with differing prices and finance charges. They have definite limitations for comparisons among transactions with varying maturities and when liquid assets are used in place of borrowing.

b. *Computational rates,* normally expressed on a per annum basis, facilitate comparison of credit costs for alternative maturities provided such rates are all cast in the same form. Different forms of computational rates, at best, are only roughly comparable, and must be converted to effective annual rates for comparison with yields on liquid assets, computational rates.

c. *Effective rates,* whether computed from dollar charges or from a computational rate, are cumbersome to calculate on an actuarial or annuity basis. It is likely that some easier formula, such as the direct-ratio or constant-ratio formula, would offer a more convenient means of approximating the actuarially correct rate. Rate tables or charts based on any of these formulas represent a further short cut in determining finance rates. Whether computed with an annuity or approximate formula, or a rate chart, an effective rate provides the most accurate comparison of credit transactions having different maturities or involving a choice between liquidating assets and borrowing. Effective rate comparisons should, however, be used with caution whenever they involve short-maturity installment contracts for small amounts or when the same commodity for example, a new car, may be purchased at various prices.

In the above section no mention was made of the incentives included "free-of-charge" by lenders or retailers in some credit transactions, specifically the various types of life, health, accident, and disability insurance. In some areas, there were more variations in these charges, particularly among commercial banks and personal finance (small loan) companies, than among finance charges.

Professor Mors has performed a service in reviewing these mystical areas of consumer credit. His definition of finance terminology is clear and succinct and his glossary of terms is useful. Anyone interested in consumer credit could profit from this information.

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Local Finances in Perspective. By K. Venkataraman. New York: Asia Publishing House, 1965. Pp. viii + 63. $3.75.

Finances of local government are comparatively neglected. It is increasingly clear that delegation of functions to local government without providing adequate resources is meaningless and dangerous. The problem of local finances is that *ad hoc* decisions are made without consideration of the central problem of matching local financial resources with local service responsibilities. If Mr. Venkataraman were not speaking primarily of India, many of his statements would be applicable to the United States.

The transition from merely *ad hoc* decisions to coherent programs is hampered by the conflicting roles of local governments. Local governments in India are seen increasingly not only as means of providing local amenities but also as agencies of state and national development—of scattered local projects and of local portions of the national social overhead. Furthermore, the author views local governments as training grounds in democratic participation. However, because interest in local sharing of responsibilities has not been matched by rational plans of local financing, widespread Indian development programs may go awry.

Funds to cover government functions include taxes, possible earnings of minor public enterprises, and contributions in money, kind, or labor. Some taxes are collected at higher jurisdictional levels and returned to local governments. The author judges that some taxes, present or prospective, can be more easily collected by units of stronger and broader reach. He favors grants for equalization purposes, because, although grants do not consistently favor local autonomy, "local autonomy on a starvation diet will be functionally self-defeating."

The local units are creatures of the state governments. Thus, constitutionally they are

clearly not within the purview of the national budget. In addition, the states neglect finance of their local governments. Although action occurs occasionally at higher levels on local finances, it may be misguided and too restrictive. Therefore, Mr. Venkataraman urges that, even as to obligatory local functions, room for local initiative be preserved, so that people may be conscious of having their local governments serve as more than mere departments of higher governments. The author does not expect that new sources of taxation will be entrusted to local bodies. He assumes that the future of local finance hinges primarily on present taxes collected at higher levels and returned to local governments and on grants from higher governments.

This small publication is not a book with the usual accoutrements. Although there are numerous references to western and Indian sources, it has no formal bibliography. There is no index, and the table of contents carries only chapter titles. But, this essay from India merits attention, since, with some exceptions such as Maxwell's recent publication from the Brookings Institution, U.S. public finance scholars have tended to neglect local finances. And, since so many of our problems of government, here and in India, involve the question of how we value people, we could gain from this author who closes his essay by recognizing that, along with the cash problem, moral answers are involved.

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Banker Dahl of South Dakota. By A. E. Dahl. Rapid City, South Dakota: Fenske Book Company, 1965. Pp. 296. $4.95.

This book is the most recent contribution to a modest accumulation of literature about banking in South Dakota. It is an interesting account of a man who spent 48 years as a banker. Mr. Dahl speaks candidly of the men, places, and events which mark the development of banking. The autobiography fully reflects the growth of Rapid City and the entire Black Hills region.

Mr. Dahl's career in banking, begun on July 1, 1917 at the First National Bank of Toronto, South Dakota, was soon interrupted by a 13-month service in the Navy. After the World War I Armistice, he returned to Toronto and to the difficult times which confronted bankers in the 1920's. Mr. Dahl supplemented his practical education in banking by studying law in the office of a Toronto attorney and successfully passed the South Dakota Bar Examination. In the summer of 1927, Mr. Dahl became assistant cashier of the Citizens State Bank in Castlewood, South Dakota, a town of about 600 persons. He continued to augment his income by the practice of law.

In 1930, Governor Warren Green of South Dakota appointed E. A. Ruden as Superintendent of Banks. Mr. Ruden named Mr. Dahl state bank examiner. Two years later, Mr. Dahl was offered the position of receiver and examiner in charge of liquidation of the Pennington County Bank in Rapid City. By the spring of 1934, Mr. Dahl became cashier and managing officer of the reorganized Rapid City National Bank, whose name was changed in 1961 to American National Bank of Rapid City and is now known as the American National Bank and Trust Company.

Mr. Dahl traces his banking experiences and the economic development of the western portion of South Dakota from 1935 to 1965. Recovery from the depression years brought rapid growth and prosperity to Rapid City and the Black Hills area. This development, combined with Mr. Dahl's leadership, resulted in a continuing period of growth of the bank in assets and service facilities. The prosperity of Rapid City and the region was given additional acceleration with the installation of military facilities and a rapid increase in population. Banker Dahl's policies concerning the treatment of borrowers, customers, and the public, conformed with the rising opportunities of those years.

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Errata

This is a corrected version of Table 6d, Income and expenses of national banks, by states, year ended December 31, 1965, page 576, of *The National Banking Review* for June 1966.

	Net income before related taxes	Taxes on net income		Net income before dividends	Cash dividends declared			Net income after dividends	Capital accounts*	Ratios	
		Federal	State		On common stock	On preferred stock	Total cash dividends declared			Net income before dividends to capital accounts (percent)	Total current operating expenses to total current operating revenue (percent)
United States	$1,999	$552	$60	$1,387	$682	$1	$683	$704	$16,112	8.61	74.44
Alabama	28	8	1	19	8	0	8	11	194	9.79	71.05
Alaska	5	2	—	3	—	0	—	3	14	21.43	70.59
Arizona	15	4	—	10	5	0	5	5	133	7.52	79.79
Arkansas	11	3	0	8	3	0	3	6	87	9.20	71.43
California	241	65	24	151	94	0	94	57	1,829	8.26	79.00
Colorado	19	5	1	12	7	0	7	5	179	6.70	79.65
Connecticut	19	4	2	13	7	0	7	7	147	8.84	75.79
Delaware	—	—	—	—	—	—	—	—	2	2.11	90.37
District of Columbia	15	6	0	9	4	0	4	4	101	8.91	68.33
Fiorida	38	13	0	25	12	—	12	14	420	5.95	77.50
Georgia	25	8	0	17	8	0	8	9	233	7.30	75.54
Hawaii	4	1	—	3	1	0	1	1	41	7.31	80.00
Idaho	10	3	1	6	3	0	3	3	46	13.04	70.27
Illinois	194	60	0	134	54	0	54	80	1,436	9.33	71.75
Indiana	45	14	0	31	11	0	11	20	342	9.06	72.82
Iowa	16	5	0	11	4	0	4	7	117	9.40	72.73
Kansas	23	6	1	16	6	—	6	10	170	9.41	67.86
Kentucky	17	6	0	11	5	0	5	7	128	8.59	69.70
Louisiana	28	9	0	19	7	—	7	11	226	8.41	70.69
Maine	5	1	0	3	2	0	2	2	43	6.98	70.83
Maryland	18	5	0	12	6	0	6	6	158	7.59	71.43
Massachusetts	72	24	5	43	25	0	25	18	510	8.43	66.54
Michigan	55	10	0	45	19	—	19	26	520	8.65	80.43
Minnesota	45	12	4	30	14	0	14	15	330	9.09	73.23
Mississippi	10	3	0	7	3	0	3	4	61	11.48	69.77
Missouri	41	13	1	27	14	0	14	13	357	7.56	69.46
Montana	5	2	—	3	2	0	2	1	44	6.82	71.87
Nebraska	19	6	0	13	5	—	5	8	142	9.15	71.05
Nevada	9	2	0	7	2	0	2	4	37	18.92	69.23
New Hampshire	5	2	0	3	1	0	1	2	44	6.82	70.83
New Jersey	58	13	0	44	20	—	20	25	477	9.22	76.82
New Mexico	7	2	0	5	2	0	2	2	51	9.80	77.78
New York	240	38	13	189	107	1	108	81	2,206	8.57	74.93
North Carolina	20	6	—	13	7	0	7	6	151	8.61	74.44
North Dakota	6	2	—	4	2	0	2	2	38	10.53	74.07
Ohio	98	31	0	67	28	—	28	39	737	9.09	72.48
Oklahoma	35	11	1	22	12	—	12	10	306	7.19	70.34
Oregon	27	5	2	20	9	0	9	11	185	10.81	79.55
Pennsylvania	141	32	0	110	57	—	57	53	1,294	8.50	73.57
Rhode Island	7	1	—	6	3	0	3	3	54	11.11	81.08
South Carolina	15	6	—	10	4	—	4	6	77	12.99	67.39
South Dakota	8	3	—	5	2	0	2	3	43	11.63	71.88
Tennessee	39	13	0	26	9	—	9	16	277	9.39	73.01
Texas	133	42	0	91	48	0	48	44	1,166	7.80	72.29
Utah	9	3	—	6	3	0	3	3	55	10.91	69.44
Vermont	2	1	—	2	1	—	1	1	24	8.33	80.00
Virginia	34	11	0	23	11	0	11	12	266	8.65	73.13
Washington	36	13	0	24	11	0	11	12	262	9.16	75.82
West Virginia	13	5	0	9	3	0	3	6	97	9.28	67.39
Wisconsin	29	8	2	19	9	0	9	10	216	8.80	74.80
Wyoming	4	2	0	3	1	0	1	2	36	8.33	76.19
Virgin Islands	—	—	0	—	0	0	0	—	2	9.17	75.34
D.C.-all†	31	13	0	18	8	0	8	9	176	10.23	68.47

* Represents aggregate book value of capital stock, surplus, undivided profits and reserves. Figures are average of amounts reported for the June and December call dates in the current year and the December call date in the previous year.
† Includes national and nonnational banks in the District of Columbed profits and reserves. Figures are averages of amounts reported for
Note: Data may not add to totals because of rounding. Dashes indicate amounts less than $500,000.